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A CASE STUDY ON PROBLEMS OF TEXTILE INDUSTRY WITH REFERENCE TO POWERLOOMS OF ICHALAKRANJI

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ABSTRACT

Textile industries of India are well known to everyone due to its significant contribution towards economic development. It has gain a prominent position in the Indian & global market. The industry is providing live hood to millions of people by providing them direct & indirect employment opportunities. The composition of cotton textile sector is very multifarious with existence of old technology of hand spinning and hand woven with the most classy automatic spindles and looms. There are several factors responsible for recent growth and development of power looms. India is known for world's biggest installed base of looms. There around 5 million looms in the country. India has 1.8 million Shuttle looms with 45% of world's capacity. Ichalkaranji is one of the renowned powerloom centres in Maharashtra. The center is well known for its multi-coloured product 'Patal' Sarees which is made from imported yarn. There are about 160 sizing units, with 250 sizing machines. The machines include conventional to modern base of technology with more than 1 lakh powerlooms. The powerlooms of Ichalkaranji dealing with issues like (i) Cultural and social issues (ii) Labour Related issues (iii) Raw Material Related issues (iv) Financial Related challenges (v) Managerial and marketing (vi) Technology and knowledge (vii) Government policies

Keywords: Economic Growth Developmentnt spindles and looms, Grey Fabric, Powerlooms of Ichalkaranji, Modern machines.

❖ INTRODUCTION

Textile industries of India are well known to everyone due to its significant contribution in economic development. It occupied the prominent position in the Indian & global market. The industry is providing live hood to millions of people by providing employment opportunities and also by contributing in GDP. It lines second after agriculture. The industry contributes near 16% of industrial production and 2.8% of GDP. Indian textile has classified in three parts which output comes from Mill sector, Handlooms and Power looms. Among that handloom sector is the oldest and form a part of tradition like craftsmanship. The mill sector playing major roll since 1834 with great installed capacity of 37.07 million spindles and 4,89,718 rotors. And the power loom sector which are come before three decades and occupied the dominant position with 22.05 lakh power loom in country

The earlier handloom industry which has handmade operating base gave roots to power loom industry. It was the handloom industry that transformed to present power loom industry. The growth of this industry started with a losing importance of textiles mills during great depression (1929 to 1933) when they started discarding themselves.

The Maharashtra state has 11.06 lakh power loom units. Among that the highest number of power loom unit are unorganized in nature. The State contributes a major share in growth and development of power loom industry. The Power looms of Maharashtra are clustered and segmented in the following prominent power loom centres – Bhiwandi [Thane Dist.], Ichalkaranji [Kolhapur Dist.], Sholapur [Sholapur Dist.], Malegaon [Nasik Dist.], Dhule [Dhule Dist.], and Sangli [Sangli Dist.], Most of these power looms are working in decentralized sector.

STATEMENT OF THE PROBLEM

The purpose of current study is to analyse the profile & problems of power looms of Maharashtra in general and Malegaon & Ichalkaranji in particular. Beside this the study will help to reveal what the factors responsible for growth and development of power looms. Also the study will highlight the challenges facing by the current industry & to recommend the concrete majors to overcome the various problems faced by the sector.

❖ OBJECTIVE OF STUDY

- To study the profile of power looms in Ichalkaranji
- To discuss the problems & issues facing by the power looms Ichalkaranji.
- To conclude with suggested measures and recommendations.

The data used in this paper is collected from the secondary source purely taken from various journals, magazines, thesis, article, web links, government websites & books are used as source of information. The scope of study is restricted to power looms of Malegaon & Ichalkaranji only.

❖ Historical Background

The history of textile sector is very old which can be traced from British era. The British were arrived at Surat in 1608. The composition of cotton textile sector is very multifarious with existence of old technology of hand spinning and hand woven with the most classy automatic spindles and looms. The initial cotton textile mill was set-up in Ahmadabad in 1861, which was assumed as to be emerging of rival center to Bombay. The enlargement of the textile industry in Ahmadabad was mainly due to the Gujrati community trading class. The textile sector also comprises the textile mills which are extremely complex with the modern, sophisticated and highly mechanized on the one hand and hand spinning and hand weaving (handloom sector) on the other hand and in between these two decentralized powerloom sector falls.

History of weaving fabric on looms can be traced back to 17th century. The first powerloom was invented by Edmund Cartwright in 1785. Originally powerlooms were with shuttle, and they were very slow. But as the industrial demands for faster production accelerated, faster looms without shuttles came in use in early part of 20th century. As developments and innovations took place, various types of looms were developed for faster production.

❖ Current position

The role of every sector in the economy and is changing over the period of time, but even today cotton textiles continue to dominate with 74% share. India has world's biggest installed base for looms. There around 5 million looms in the country. India has 1.8 million Shuttle looms which are 45% of world capacity. The power loom industry is in an important position in the economic life of the nation. The total business of this sector is Rs.10, 000 crore per annum. It produces more than 60% of cloth in India and textile ministry's estimation says that more than 60% of the country's cloth exports originated from the above sector. Apart from this sector also provides employment to 4.86 million workers, which comprised approximately 60% of total textile industry employment. The current growth of this sector has been restricted by out-dated technology, inadequate finance, low productivity, low-end quality products and power cut in states like Maharashtra. Changes are taking place in this sector, as many countries would be inventing new style of machinery that is likely to have low manual interface and power cost.

Looms installed capacity (2018-19)	
Item	Units
Looms (Organised Sector)	58000
Powerlooms	3.06 Mn.
Handloom	2.18 Mn.

Source: Office of Textile Commissioner

❖ Powerlooms of Ichalkaranji

Ichalkaranji is one of the renowned powerloom centre in Maharashtra. The powerloom were started in 1904 in Ichalkaranji. The center is well known for its multi-coloured product 'Patal' sarees which is made from imported yarn. The afterwards weavers of Ichalkaranji changed their production to grey cloth in fine and superfine dhoties and mulls. Apart from its contribution in cloth production the sector also has the present age of modernization and the weavers are also on the path of modernization of powerlooms.

According to *Textimes'* editorial conveyed that, there are about 35 spinning mills in Ichalkaranji. Units of Ichalkaranji are well operational with modern art of machinery and spinning mills of here are 100% Export Oriented Units. The spinning mills also have easy access to better quality raw material which is required for weaving units. There are about 160 sizing units, with 250 sizing machines, which include conventional to modern machines and more than 1 lakh powerlooms. These powerlooms include plain looms, dobby, drop box, auto and semi auto looms. Such wide ranges of machines are producing fabrics such as cambric, popline, dhoti, printed sari, blouse, interlinings, shirting, canvas and industrial textiles. More than 35 process houses and about 80 hand processing units are fulfilling the needs of the sector. All these units are run on a small scale basis by the various entrepreneurs. Production on powerlooms was mostly catering to local markets, because lack of availability of updated technology. As the quality consciousness and requirements increased since 1980, semi-auto, and fully automatic powerlooms were introduced, producing fabrics for school uniforms and medium weight industrial fabrics etc. Air jet technology is used to produce sheeting fabrics and projectile technology is

used to produce shirting and to some extent, the industrial fabrics. The fabrics (in grey and finished form)

Bangalore.

Today, in Ichalkaranji state-of-the-art beam warping, sizing and sectional warping machines are in operation. Further small units of garment manufacturing were started in order to add in value of supply chain. Considering today's situation non-automatic tappet powerlooms dominate in Ichalkaranji's de-centralized sector. Almost 80 to 85% looms are of this category

Issues of Powerlooms of Ichalkaranji Identified were:

(i) Personal, Cultural and Social issues

(ii) Labour Related issues

(iii) Raw Material Related issues

(iv) Finance related Issues

(v) Managerial and marketing Challenges

(vi) Technology and knowledge Challenges

- **Personal, Cultural and Social Issues**

Many social and cultural issues were acting as an obstacle in operational functioning of powerlooms. Poweerlooms in Ichalkaranji have reported that they get lack of support from the informal reference groups like relatives and friends due to which the performance of units is affected. Further, the clusters were often formed on the basis of ethnicity and form the basis of support systems in the industry. inequality on the grounds of education is widespread amongst the workers. Startups face restrictions due to the tinted perception of families regarding the working of the industry and preoccupations about a professional and modern work environment. The measure challenge affected on the industry is linguistic insufficiencies and lack of cultural understanding.

- **Labour Related Issues**

The workers of powerloom suffer from depression and mental stress due to work environment. Also the job satisfaction level among the workers is less than 58% found in study. Due to day & night shift many worker have addiction of alcohol and tobacco. Further it was found that owners of loom torturing workers for payment related issues. Many of workers left their jobs due to working conditions and pay. Employees are also facing job skills related issue due to lack of training and development.

- **Raw Material Related Issues**

The powerlooms of Ichalkaranji also reported that they are constantly find hike in the prices of yarn and its availability. For manufacturing cloth basic material required is yarn. The prices of yarn are unstable and continuously going on hike. The reason for hike in price is re-selling of yarn with the help of intermediary. Because of this powerloom owners or weavers get yarn at high price. Many times due to high prices owners find themselves in difficulty and not able to deliver order on time and business operations get stuck.

- **Financial Issues**

For successfully running any organisation smooth flow of finance is necessary. It is found that the powerlooms of Ichalkaranji facing shortage of finance and the reason behind that is earlier M.S.F.C. (Maharashtra state Financial Corporation) was providing finance to these units at low rate of interest but many powerlooms owners could not repaid the on time therefore M.S.F.C. stopped giving loans to these units, same things happen with nationalised banks also they have started resistance in providing loans to the powerloom owners. For smooth functioning industry needs finance in order to purchase new looms, yarn, spare parts. It also requires construction sheds for maintaining large quantity of production. For all these powerloom owners and weavers facing problems of finance. The financial assistance available from the private banks and money lenders is not at affordable, due to high rate of interest cost.

- **Managerial and Marketing Challenges**

In recent times, the importance of management and marketing for the successful working of an enterprise has increased manifold. This has perhaps induced a complacent attitude in the working of the laborers. Lack of education and experience in terms of strategic and goal oriented planning hinders effective communication. The average size of a managing department comprises of mere 5 to 10 employees, which leads to delay in processes and unmanageable work load. Due to a myriad of management and marketing issues which results low sales, many units have been shifted to screen printing and have traditional hand printing techniques.

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- **Technology and Knowledge Challenges**

For an efficient execution of any task always required experience and knowledge, now this knowledge and experience has a new dynamic dimension called technology. Most of the powerloom owners face challenges

effectively and efficiently. Due to lack of skills and underutilization of available technology units are facing financial loss. Opportunity cost of the factors is extremely high & poor infrastructure also a measure hindrance in development. No equipments are used to combat the natural obstructions caused to the industry.

❖ RECOMMENDATIONS & CONCLUSION

- Being one of the oldest and well known geographically settled industries, state government should try to induce youngsters for entrepreneurship in this industry.
- Provisions providing easy loans at low interest rates can serve as an encouragement to the industry.
- Symmetric Information related to loans, subsidy, procurement of raw material should be provided from time to time.
- Action research on low cost technologies and effluent treatment is required to minimize impact of the industry should be carried.
- Skill development and dissemination workshops should be held to familiarize the workers with technology to make industry more prosperous.
- Markets should be made available for the ready garments, so that the more production can be sought developing industry further.
- Startup and standup schemes should be made available to increase local self employment.
- The modernization in industry should be encouraged to enjoy economies of scale and produced quality and standardized finished products.

❖ CONCLUSION

Power loom industry is one of the most known businesses after agriculture in India. In Maharashtra, Ichalkarnji based power loom business is well known clothe market and employment creation. The majority of the units are run in this city in comparison to other cities of Maharashtra. The major problems of the industry today are increase in cost of electricity, fall in demand of garments and increase in rate of interest of loans provide. The cost of production is so high that it does not yield adequate profit. Units are being shut down as the cost of electricity is beyond capacity. The initiative of government is neutral somewhere towards this traditionally carried business. In order to keep power loom business going, an immediate attention is needed to be given to survive industry in near future.

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Powerloom Textile Industries in India - Problems and Solutions

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ABSTRACT
India is the largest producer of textile and clothing. The textile and clothing industry are different and diverse industry which covers number of activities from renovating raw material into fibres to yarns fabrics which turn into the production process. The textile and clothing industry use multiple applications e.g. garments, sport equipment, household, medical textiles etc. one of the major sector in the industry which contribute 60% of its total industrial production are come from decentralised powerloom industry. The Indian powerloom industry has great legacy, which did not have any match in the history of industrial development. But in today's time this powerloom sector is facing several problems like finance, marketing, outdated technology. Further the number of powerlooms are sick and production from this sector is declining. In the above paper researcher highlighted the current situation of the powerloom industry and various challenges that restricting the growth of industry. Further various measures were suggested.

Keywords: Textile Industry, Powerlooms, Obsolete Technology, Government support & Policies, Labour, PDEXCIL.

INTRODUCTION

The Textile industries of India enjoying a dominant position in the world and Indian market since decades because of its unique style of functioning and manufacturing process. The industry not only generating the revenue to the country but also showcasing the Indian culture in international market. Due to its uniqueness the product has significant demand in domestic and world market. It ranks second after agriculture. It contributes about 7% of industrial output, 2% of GDP and 15% in countries export earnings. The Industry also attracts the foreign investment and offers great opportunities for new investment. India is the third largest producer, consumer and exporter of 100% cotton yarn as well as blended yarn and it also enjoys low cost cotton sourcing compared to other countries. The industry employed more than 45 million people in 2018-19 and the production of the industry reached to 33.7 million bales in 2019. Apart from this the Exports earning during the FY 2018-19 were stood at US$ 69.2 billion and it is expected that it will increase to US$ 82.00 billion by 2021. In today's time it ranks second in terms of providing employment and also a source of livelihood in villages and remote areas. The government of India and state government of respective states are also assisting these sectors as it generates revenue to the government. The output of industry comes from Textile Mills, large number of unorganised powerlooms and handlooms. The measure share of productions comes from decentralised powerlooms. These powerlooms are producing various kind of fabric which have great demand in domestic market. "Powerloom" means a loom which is worked by power as defined in section 2 (g) of the factories Act 1984. Powerlooms come in to force due to the declining of importance of Handloom and technological invention. The growth of unorganised powerloom were seen steadily increasing specially after the 1950. The powerloom industry provides the employment opportunities to both skilled and unskilled workers and source of livelihood to billions of people.

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OBJECTIVE OF STUDY

- To understand the current position of Indian powerloom textile industry.
- To study about the various problems related to powerloom textile industry.
- To identify the various measures taken to overcome these problems faced by the industry.

METHODOLOGY

The data used in this paper is collected from the secondary source purely that is various journals, magazines, research articles, web links, books, government reports have been used as source of information. The scope of study is restricted to only textile industry.

SIGNIFICANCE OF STUDY

The descriptive paper aims to study the functioning of powerloom Textile industry. In this small study conducted to frame this paper I have tried to figure out the various problems facing by the industry and their solutions.

CURRENT POSITION

The decentralised powerloom industry is most prominent segment of Textile industry. It contributes in the form of fabric production and also provides employment opportunities. The Powerloom industry in today's time provides around 70 per cent of the total jobs in the textile industry by employing over 4.4 million people. In the country it is found that approximately 2.701 million registered looms producing 54,000 square meter fabrics, which are located in different clusters like Erode, Salem, Madurai, Ichalkaranji, Solapur, Bhiwandi, Bhilwara and Malegaon, among others. The 60% of the fabrics produced in the powerloom sector are of man-made and more than 60% of fabric which are exported are also come from powerloom sector. There are approximately 27.77 Lakh Powerlooms as on September, 2018. The technology use in powerloom sector are different in different looms which ranges from plain loom to high tech shuttle less looms. Nearly 1.50 lakh shuttle less looms in this sector. It is also revealed that more than 75% of the shuttle looms are using obsolete and outdated technology which restrict the growth of industry. However, in some cluster it is found that there has been significant up-gradation in the technology level of the powerloom sector during the last 8-9 years. Further for developing and promoting export of powerloom products currently the Powerloom Development and Export Promotion Council (PDEXCIL) a nodal agency is working. This Council directly undertakes promotional activities like, participation in international trade shows, organising of training support facilities, sending and hosting trade delegations, and sustained image-building exercises through advertisements abroad, publications and audio visuals.

The current growth of this sector has been restricted due to use of obsolete & outdated technology, inadequate finance & marketing facilities, unskilled labour, low level of productivity, inadequate quality products and power cut. Changes are taking place in this sector, as many countries would be inventing new style of machinery that is likely to have low manual interface and power cost.

Growth in number of Powerlooms and % of cloth production in total production in last five years:

Year	No. of Powerlooms	Growth percentage	Total Cloth Production (in Million squ. mtr.)	% of Powerloom in clothe production
2014-15	24,47,837	3.39%	65,276	57.83%
2015-16	25,22,477	3.05%	65,505	56.78%
2016-17	26,29,269	4.23%	64,421	55.37%
2017-18	26,66,229	1.40%	67,779	57.46%
2018-19	27,77,575	---	64,813 (Apr-Feb)	56.43%

Source :- Ministry of Textile Report 2018-19

The researcher identified that there are various problems related to powerloom industry which are:

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Shortage of raw material and availability of skilled labour

Allen R.C and S. Sudha (2018) revealed that in the process of production weaver and job workers are the key personnel. In order to get cloth material on time master weaver directly deals with job workers who normally found incompetent for completing order on time. Job worker demands for advance which block the working capital which can be use for purchasing yarn and the problem of labour turnover turns the advance into bad debts which hamper the smooth functioning. M. D. Geetha stated that apart from labour turnover, industry is facing the problem of price fluctuation which create an indirect effect on income of master weavers and manufacturer. To reduce the burden of increased price master weavers, reduce the size of labour which again affect the quality of production. **Kolipaka, S. (2016)** also revealed that small units get lack support from the informal reference groups like relatives and friends due to which the performance of the venture is affected. However, clusters are often formed on the basis of ethnicity and form the basis of support systems in the industry. The socio culture of the industry also creates an impact on the performance in terms of quality and quantity.

Lack of availability of Finance

M. Senthilkumar and Dr. Rajendran (2013) stated that the finance is life blood of any industry for their smooth functioning. Finance is passive factor which creates other factors functional in process of production till the final consumption and generate returns in multiplication. Easy availability of finance and marketing of their products are another important challenge for industry. Due to unorganized nature it finds difficulty in getting credit form commercial banks. For getting finance the sector highly depends on private sector lending institutions which charges high rate of interest. **Uttam D. K. (2013)** Theburden of higher rate of interest earning turns into expenditure and restrict the further investment into the business. As finance forms the crux for any sector, insufficient awareness regarding finance work like involuntary tax burden on the industry.

Absence of Managerial and Marketing communication skill

Dulange, R. S. (2013) and Arif Anjum (2011)mentioned that absence of market with good price for product discourage the industry to produce and store on the large scale, which fall to take the benefit of economies of scale. Further the competition from organized textile industry restrict the product in domestic market only. **Dr. D.V.Thakor, Dr.Y.T.Pawar, Mr.Arif Anjuman (2009)** In the recent era the importance of management and marketing for the successful working of an organization cannot be ignored. Perhaps induced a complacent attitude in the working of the laborers. Lack of education and experience in terms of strategic and goal-oriented planning hinders effective communication and research in the field. **Misra, R.N. (2005)**The average size of a managing departments is very small and unsystematic way leads to delay in processes and unmanageable work load. Due to a myriad of management and marketing issues which resulted into low sales, many units getting work done through using traditional technique which creates an impact on quality of output.

Use of Outdated Technology and lack of handling Knowledge

K. C. Goli and Dr. Deshmukh-(2015) mentioned that an efficient execution of job has always required experience and knowledge, in today's time this knowledge and experience has a new dynamic dimension called technology. Most of the weavers and job executives are not friendly in operating and some of them also not ready to adopt modern style of functioning in the organization. Due to lack of experience many organizations not operate up to the mark and capacity remains underutilize. Further many of them are not skilled enough to execute tasks effectively and efficiently.

Najir, Shaikh Faruk and Pawar, Ashok S. (2012)the time and resource loss that occurs due to lack of skills and underutilization of available technology, organization loses the profits and potential capacity. The opportunity cost of these factors is extremely high. Many industries have poor infrastructure facilities which is another challenge for industry. During Monsoons, although a short-term period, there is a work impasse due to dampness in the weather which leads to leaking of color on the cloth if printing is continued. Bright sun-shine provides fabrics an extra luster making it easy to dry. No equipment's are used to combat the natural obstructions caused to the industry.

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Operational Problems

Rinku & Bhoje, G. (2017) stated that the operational performance of Bhiwandi powerloom industry were based on unscientific approach. It is established in order to get rid from handloom which required more labour. Majority of powerloom in remote area are run by small entrepreneur only to get livelihood for family and not as a commercial business. Poor transportation, constant power cuts, poor quality of raw materials and shortage of water sources cause problems in functioning of all the sector. Further handling of technology and utilization of resources are not up to the mark.

Issues related to Government Policies.

Dr. Sultana Fatima Mehar, Nisa Mehrun (2016) many organizations not knowing about current government schemes and policies. Their knowledge is restricted to that of banks and financial institutes that provide loans. There exists a wide communication gap between the implementers and users at a lapse of ten years.

To overcome the above listed issues various measures were suggested which are:

- The problems of shortage of Raw material can be resolved as in India the key element of industry is that it has an abundant availability of raw material in the form of raw cotton, wool, silk and jute. It also enjoys a competitive advantage in terms of cost of production and skilled manpower. They should provide job safety and security to workers which can reduce the labour absenteeism and job turnover. Further the industry should more focus on quality of input used in production which can be turn in to quality of output which will get great demand in international market.
- In order to solve the financial problems **Mr. Ramachandran, M. & Raichurkar, P. (2015)** in theirstudysuggested government must encourage the entrepreneurs and small businessman. Further industry should take initiative towards public sector banks in order to get loan at low interest and banks need to entertain the ideas presented by the entrepreneur by considering the performance. Provisions of funding schemes and loans at low interest rates can serve as an encouragement to the entrepreneurs and the industry. Information related to procedure of receiving loans should be circulated frequently. Some help should be provided for initial machinery installment. Most importantly, government should create an enabling environment allowing rural Self Help Groups (SHGs) to grow and perform their functions more effectively.
- For effective communication and to increase the managerial ability **Srivastava, D. K., and Saidpur, G. U. (2017)** suggested that the industry should initiate some programs for education which will help the enterprises and managerial personnel to perform effectively. The modern world is all about e-marketing, industry should take initiative for reaching their product to the global level. Use of various online platforms should be increased and more focus should be given for digital marketing. **Rinku (2017)** The managing authorities should bring changes in the organization design as per the situation. The laborers should be provided bonuses and promotions to keep them loyal to the company.
- To resolving technological obstacles **Dickerson, K.G.** suggested an action-based research need to be taken for inventing low cost technologies and effluent treatment is required to minimize impact of the industry. Development of a toolkit on sustainable textile production by the government can help the start-ups in equipment installation. **Chakrvarti D. (2014)** suggested training and dissemination workshops or seminars should be held to familiarize the workers with technology. Indian industry should adopt the technology which are use by foreign countries in order to increase the pace and quality of production. Various technology parks need to be setup and training should be provided.
- For smooth functioning **Dubey Rupesh D. (2019)**The industry should adopt systematic approach in its functioning and the entrepreneur should develop themselves for taking risk and also the initiative for increasing the size of business should be incorporated. Small units must develop a long-term plan in order to get benefits of large scale and spread its activities for covering different areas of business.

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- For policy related issue **S. Sudha (2018)** suggested government should use media for reducing the communication gap with the industry. Body should be setup which personally communicate with the industry. Government should continuously monitor the allowance distribution by creating special committees. It should plan camps and workshops to inform them about the different plans and policies launched by the government. A third-party body should monitor the effective execution of government policies. Also, the government should employ a comprehensive feedback system to get exact position about policy implemented and benefits reached to the industry.

Measures taken by the government for solving some issues are :

- 100% FDI (Automatic route) allowed in the Indian textile sector. To boost export, free trade with ASEAN is allowed.
- Government is making huge amount of investment under Scheme for Integrated Textile Park (SITP) and Technology Upgradation Fund Scheme (TUFS) to encourage more private equity and train workforce.
- PDEXCIL is set up by Ministry of Textiles, Government of India. PDEXCIL is a non-profit organization working for the development of Powerloom Industry in India and promoting export of Fabrics and Made ups from Powerloom Manufacturers.
- All India Powerloom Board (AIPB) was first constituted as an Advisory Board to the Government of India in November, 1981 with the aim to advise the Government generally on matters concerning the healthy development of Powerlooms within the power operated weaving sector including measures to be taken to achieve better productivity, increased efficiency, improve welfare of workers and locational dispersal of Powerlooms.

CONCLUSION

The research highlights the key elements such as the importance of finance, role of technology, problems of raw material etc. It also states the present policies of the government towards the sector and what further measures can be implemented by the government for the upliftment of the sector. Also, what steps to be taken to overcome the above listed challenges. Research sketches out a systematic and categorical system of understanding these threats to the industry's functioning and existence such that further research can be done to investigate potent solutions to address the dire situation. Factors such as lack of knowledge, poor communication skills, shortage of labor and certain problems related to marketing and finance are given utmost importance in this paper. Organization of camps and workshops to spread awareness and build capacities are pivot to bring about change.

The future for the Indian textile industry looks promising and can be seen buoyed the both strong domestic consumption as well as export demand. In past few years the retail sector experience rapid growth due to consumerism and raise in disposable income. further the entry of several international players like Marks & Spencer, Guess and Next into the Indian market raise the standard of people who prefer the quality products. High economic growth has resulted in higher disposable income. This has led to rise in demand for products creating a huge domestic market.

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An Overview of Impact of Technological Changes on Performance of Powerloom Textile Industries

Yogesh Prabhakar Pawar*
Dr. Deepak P. Sable**

ABSTRACT

Over the period of spell change in style of technology brought significant dynamism and automation in Indian economy and given a tremendous opportunity in the field of industry. Since the time of industrial colonization, technology has occupied a dominant and leading position in the Indian economy and become integral part of it. Today Indian textile market flourishing in world market due adoption of new style of technology in its every sector. Textile Powerloom Industry is one of the areas of Indian economy which is known for its cotton fabric and unique style of cotton work in world market. The role of technology in manufacturing textile industries is very essential which helped it to face the competition in the field of globalization. In order to maintain well growth in this sector it is needed to streamline itself on continuous introduction of newline of technologies which will reduce the workload and also figure out the competitive performance and efficiency of the organization. Further the employees need to be encouraged to gain new competitive knowledge of technology for survival in the field of newer technology.

Keywords : Technological Developments, Skilled Labour, Textile Industry, Powerloom, Modernizations.

INTRODUCTION

India's textile industries are well known for its position in economy and evolved at very early stage and its manufacturing techniques were best in the world. Prior to colonization India's manually operated textile machines were unique and finest in the world. It also worked as a model for production of the first textile machines in newly industrialized Britain and Germany. Textiles have been playing important role in India's exports since its revolution.

It also contributed significant portion during Portuguese trade in India. These included embroidered bedspreads, wall hangings and quits of embroidered wild silk on cotton or jute ground.

The concept of the Indian textile technologies is intricately related to both, the manufacturer and decoration. This may therefore be researched in chronological framework starting from archaeological past to the contemporary times as regional developments have been very typical to certain styles of manufacture and decoration in textiles.

The Industrial Revolution was a major turning point in history which changed almost every aspect of Indian industry by way of contributing towards income and consumption. Afterwards several inventions in textile machinery and technologies has taken place in very short time period during the Industrial Revolution. There are many technologies involved in manufacturing and finishing the product like washing, coloring, stitching, spinning, finishing etc. for making wide range of products.

Today in the era of globalized world Indian economy is become very competitive. At the same time textile industry has been experiencing certain difficulties in respect of raw materials and machinery with ongoing changes.

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BACKGROUND OF THE STUDY

Indian clothing is of high quality and much demand in global market. India is still competitive globally in this sector. China has dominant position in this sector but it does not have the entire value chain like India. Other competitor such Bangladesh are competitive in low wages but do not have cotton production, in overall India has good opportunity in global market and government also providing export promotion policies for increasing their share in the global market.

The role of technology in manufacturing textile industries is very essential which help them to face competition to the large extent in this globalised era. In order to maintain well growth in this sector need to be introduction of newline of technologies which reduce the workload and increases the competitive performance and efficiency of the organisation. There is need to be separate Mechanism for handling machinery and adoption of newly introduce technologies which operate under the head of organisational department, because of these it is easy to performed in following process which involved in manufacturing production process like 1) Washing 2) Colouring 3) Embroidering 4) Stitching 5) Finishing 6) Ironing 7) Packing etc. in addition to this need technical and other administrative service personnel for handling these system.

Technical assistance provides an excellence opportunity not only for revival of the Indian textile industries but also a new direction, new ways and means to sustain and survive in near future. There are large numbers of power loom industries which can provide employment to people and decent livelihood. As there is decline in the power loom industry workers look for alternate occupations. This study attempts to unfold the status of Powerloom industry with technological revolutions.

OBJECTIVES

The main objective of this paper is to study the overview of role of technology in textile industry over a period of time.

OVERVIEW

An investigation done by **Allen, R. C. (2018)** where he revealed that how handloom weavers changed their position to powerloom in order to reduce the labour costs. He wrote that the expectation of earning a high return than handloom gave the developer pave to invent powerloom. Further the rent earned by weaver was not covered by their machines as a result of this powerlooms came in commercial use. The invention of the powerloom and new technology resulted in deprivation among the handloom weaver as the handloom weaver's earnings dropped and handloom destruction began. The earning in the case of handloom weavers, from 1770 to the next 90 years was similar and that in building labourers rose steadily and became four times higher in the middle nineteenth century due to advancement of modern technology.

Further study was conducted by **Rinku (2017)** found that the performance of Bhiwandi's powerloom in quality was not good enough. The use outdated technology restricted this sector to enter in export market and need to incorporate new style of technology which use in western countries in order to increase the size and quality of business. Also, wages paid to employee were unsatisfactory due to lack of technological skill development among workers which leads to poor working conditions and unhygienic style of living.

Bhoje, G. (2017) The bulk of India's grey fabric used as shirting material has been manufactured in Bhiwandi and it is also a source for plastic beads and crystals processing and trading. The fabric produce in Bhiwandi mainly restricted to the Indian market only because of its outdated technology. Many powerlooms of Bhiwandi are absolute and older, referring to low-priced powerlooms in the second hand. Only few units have imported machines with high-quality rest are unable to afford high-priced imported machinery as small units. Further due to insufficient power supply, the industry is also adversely affected which require approximately 2400 million units. The industry is facing power reduction problem that leads to loss costing Rs.40 crores. Employees have faced the victims of problems in the form of low wage wages to reduce costs.

M. D. Geetha (2016) studied the performance of the Namakkal district powerloom sector. She described the looms profile where most looms were operating under

used technology and only few were new with capital investment of Rs.1-3 lakhs. Dhoti was the main product produced in these units. He observed that the capacity per loom is between 5 to 7 employees and many them are located near the residence of people with basic technology. Whereas semi-automatic technology was adopted by 24 percent of the looms and produces 25 meters per day. Infrastructure, engineering, and government policies were the major issues of district powerlooms and the owners are not happy with the available variables such as capital returns, utilization of production capacity, labour potential etc.

K. C. Goli and Dr. Deshmukh-(2015) studied about the textile powerloom machine jacquard drive system, where he found that the current chain drive system which use in machines causes frequent chain failure and jerky power transmission. Also found that chain drive fails and rejects the product in weaving due to long distance between shafts, swinging effect, shaft axis misalignment and inadequate lubrication. In order to solve the problems of the current chain drive new positive gear transmission system jacquard drive system was tested for a period of one month which showed no failure compared to the existing chain drive system where four failures were found in the same period.

Chakrvarti D. (2014) the focus of her study on contractual relationships within the organization between employees, management and technology. She identified that 70 percent of firms were technically poor and engaged in labour bargaining that resulted in the formation of unions in many parts of our economy. The study revealed that technological changes affect human abilities and they need to upgrade themselves with more technological ability due to development in the field of technology. Because in the production process unqualified labour finds itself alone and the production process gets slows down.

Jnana Ranjan (2013) studied conflicting interests in handloom and powerloom between indigenous knowledge and modern knowledge system. Traditional weavers (Handloom) have difficulty in making new generation (Powerloom) understand the technology they used and the working style they followed that was fundamental and close to the environment. But conventional knowledge is becoming scarcer due to the imposition of western technological system and it is also accepted by civilizations as it supports globalization. The study revealed that the introduction of powerloom with a development object in costal Odisha did not achieve expected results and only the development picture was created for showing outside world.

S. Kasi (2012) studied about the impact of the policies of liberalization on productivity, technology and technical process growth. Quality, production, quantity, employment and demand on the world market have been the major challenges faced by the industry in the past thirty years. During the pre-liberalization period and post-liberalization period, the study found the output. He found that labour output during the post-liberalization period was very low, but growth rate was high, and the reason behind it was labour-saving technologies that increased industrial productivity and capital intensity.

Indian textile has a dominant position on the world market and has penetrated a diversified region, contributing nearly 61 percent of total world market powerloom output and 62 percent of total Indian clothing production. Most of Maharashtra's powerlooms are situated on the site including Bhiwandi, Malegaon, Ichalkaranji, Solapur, and Nagpur. He researched Malegaon's powerlooms problems. There is need for updating and modernizing the infrastructure by introducing semiautomatic systems, setting up industrial parks, setting up specific clusters and training stations for entrepreneurs to solve the problems **Arif Anjum (2011).**

Uttam Pal (2010) many looms in western Bengal have traditional use of technology. They usually buy old machines from low-cost composite mill owners due to insufficient funds, and no dyeing & bleaching units were also available. He mentioned that the non-availability of finance was a major concern for the industries as many units are run by members of the middle-class family and because of some unknown reason, banks were not prepared to provide credit. In addition, the cost of transportation is 2-3 percent higher than that of another state because it needs to buy from another state. Competition from the composite mill that captured a

large market under NTC (National Textile Corporation) and left for these units the only local market. In addition to several problems, the sector provides the largest job opportunities in the region. He suggested that some steps be taken by the government in the form of subsidies, market creation, availability of yarn at reasonable price etc.

Sundararaman S. (2010) studied the effect and use of IT in the manufacturing system supply chain. In today's competitive world, the role of information technology (IT) has helped manufacturing companies. For these, he tested the relationship between IT infrastructure, supply chain, and competitive marketing efficiency by responding to 307 managers belonging to logistics supply and marketing operations.

Anirban Guha (March 2008) research was carried out on the fabric roller doffing machine for the Indian powerloom industry, claiming that the system was designed to solve the problem of limitation constraint in the powerloom. He also states that this machine made doffing heavy cloth roller's task easier and improved the quality. The machine's model is simple and convenient to bring when there is no power in a rough setting.

The overview of the Powerloom industry in India was outlined by **Rakshit A. K. (2007)** where he mentioned that the unorganised Powerloom sector plays an important role in meeting nations clothing requirements. Powerlooms come into production due introduction of new technology in handloom in order to reduce the cost. Identified that many Handloom from Bhiwandi, Malegaon, Surat etc., converted their looms into advanced Powerloom units to increase the productivity level. He found that many units produce grey fabric that had high market demand and produces nineteen thousand-million-meter fabric every year and also play important role in providing employment and contributing exports.

From the above study it is identified that the Technology is essential in the process of production and important aspect in the following regards

To make production process smooth: It helps to make production process smooth, easier and meaningful.

Reduction in wastage of resources: Due to technology resources were utilized to the maximum extent.

Help to face competition: With the help of technology quality and quantity increases which help to face competition in the market to the great extent.

Improve Quality: Due to technology the qualities of product get enhanced.

Motivate the personnel: Technology motivate the employee for improving their skill, efficiency and reduce their boredom.

CONCLUSION

In nutshell continuous development in technology is taking place in every field and powerloom textile industry is not exception for this, in order to grab the opportunities, it is necessary to adopt modern technology. Powerloom industry is the outcome of technological change but from past few years there no technological changes have seen nor research is undertaken for development and adoption of technology in this sector. The growth of this sector is declining in world market due outdated technology. Also, there is a need of updating human skill by providing them training and development as they are the one who actually performs on these machines.

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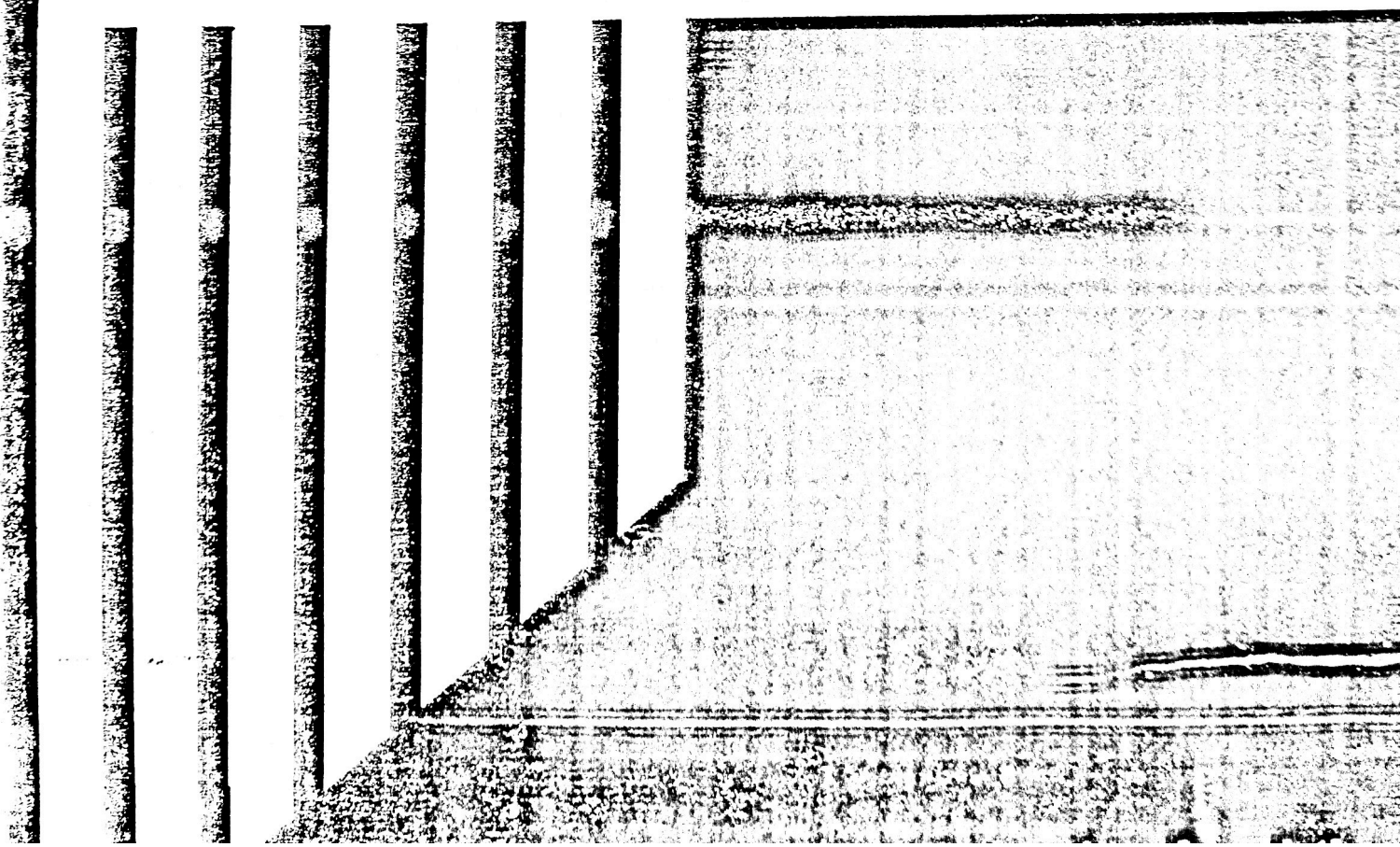

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IMPACT OF TECHNOLOGY ON INCLUSIVE GROWTH

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ABSTRACT
In the 11th Five Year Plan document, the term Inclusive Growth was introduced. In Economic terms an Inclusive Growth implies that benefits of Economic Growth should be enjoyed by all irrespective of their cast, religion, gender, region etc. It is must for achieving sustainable development. Due to globalization and subsequent competition with the world economy, technological developments have become the need of our nation. Advancement in technology is a key to achieve heights in agriculture, industry, infrastructure, health and education. Our scientists, researchers, technicians, entrepreneurs and policy makers are doing very well and have set a benchmark at international level; but to achieve global excellence, technological developments are the most important. Information Technology has developed to a great extent from last decade and is acting as an instrument for inclusive growth. Our remote areas have huge potential, abundant natural and human resource and outstanding hidden talents; but there are many hurdles and hardships in implementing innovative developments in these areas. Therefore, the need of today's economy is to remove such hurdles through appropriate mechanism and system of governance. Technology can play an important role in utilizing these resources in best manner. If we neglect these regions and people belonging to these areas, we can't achieve inclusive growth. This paper explores the impact of technology on Inclusive Growth.

Keywords: Inclusive growth, technology, development, governance, economy etc.

INTRODUCTION
Inclusive growth means equality of opportunities for economic participants as we can say that equality in all aspects i.e. equality in health, education, food security, environment quality and social protection. India's current population is 1.3 billion; out of which 5% population lives in extreme poverty according to the World Poverty Clock. As per data released by UNDP 2018 India shows a remarkable progress in reducing Multidimensional Poverty despite that, 364 million Indians showed deprivations in all dimensions like health, nutrition, schooling and sanitation. Inadequate social and economic infrastructure like roads, transport, communication banking services, education and health in rural areas is the main cause of regional disparities. Over half of the Multi dimensionally poor live in four poorest states i.e. Bihar, Jharkhand, Uttar Pradesh and Madhya Pradesh. In all these states Jharkhand reduced its position in Multidimensional poverty. Our recent growth rate is impressive. India is well known for its innovative high-tech products and services but still India could not utilize its innovation potential. In-spite of having huge dynamic young population, without developing their skills and giving them higher level of education we can't achieve inclusive growth. On the one hand social development occurs if advance technologies apply for improving the social and cultural lives of the rural poor and shortage of skilled workers as well as lack of infrastructure facilities like electricity and roads are further constraints in inclusive growth. On the other hand technological advancement could help further in separating the labor market into low skilled workers and high skilled workers, leading to growing inequality and weakens inclusive growth. Achieving inclusive growth is far more challenging job than any other objectives in the path of economic growth.

OBJECTIVES OF THE STUDY
1. To study about the impact of technology on Inclusive Growth.
2. To study about the implementation of technology in rural areas.
3. To study about the challenges and measures of Inclusive Growth.

RESEARCH METHODOLOGY
The study is purely based on secondary data. The data is collected from magazines, journals, internet, reference books, newspaper etc. Collected data are compiled and analysed for the purpose of study.

TECHNOLOGY IN AGRICULTURE SECTOR
Agriculture has got a prime role in Indian Economy. Though the share of agriculture in National Income has come down but still it has a substantial share in GDP. For developing countries advances in computing power, connectivity, artificial intelligence, biotechnology, more capable technologies led to tremendous growth in agriculture. Adoption of new technologies in agriculture sector led to accelerating rural growth .Transformation

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of agriculture sector to a large extent transforms individual's lives and enables developing countries to progress at the speed which is previously unthinkable. Modern farmers and agricultural operations work differently than few decades ago. Today's agriculture routinely uses sophisticated technologies such as robots, temperature and moisture sensors, and aerial images through GPS technology. These advance devices make agriculture more profitable and more environments friendly. Agricultural technology led to higher productivity. Less use of water, fertilizer, pesticides and less runoff of chemicals into river and ground water reduce negative impact on environment and ecology. Rural energy systems have gained enormously from scientific work related to biogas, biomass, solar energy, wind and other forms of renewable energy. New laboratories and research centers like Krishi Vigyan Kendra are being opened up to carry forward new farming techniques, new varieties of seeds, fertilizers and pesticides which are being used by the agro scientists and researchers. Investment on some agricultural equipments are long time investment like tractor, turbines generator, store houses, poly houses etc are the source of income generation for the farmers. Use of intensive technology in agriculture sector raises productivity resulted to creation of many other jobs in related sectors like food processing industries, jobs in the agricultural inputs producing industries. High yielding varieties of crops leads to increase in the demand for more labour due to high harvesting. Rapid technological development in agricultural sector increases productivity and make food more affordable. There are some revolutionary innovation to make farming more sustainable and more profitable for farmers in Indian Ariculture popularly known as Skymet, Ekgaon, Digital Green, Barrix Catch Fruit and Fly Lure + trap, Frontal rain technologies, Agrostar, Bio-sat, Air Blast Sprayers etc.

The ministry of agriculture promote various extension services for knowhow of small and marginal farmers especially in remote areas. To increase accessibility of modern technology to small & marginal farmers Agricultural Technology Management Agencies (ATMA), Kisan Call Centres (KCC), Kisan Vigyan Kendras of Indian Council of Agricultural Research (ICAR) has been established. Technological applications like genetically modified crops, precision farming (using sensors and GIS based soil, water & weather data to guide farm decisions), market information services etc could create additional value in the sector. Digital system and electronic payments could reduce the leakage in the public food distribution system.

TECHNOLOGY IN MSMES AND INCLUSIVE GROWTH

MSME sector plays a very significant role in Indian economy. This sector is largest employment generator globally and in India also it employs 59.7 million persons. It is fact that SMEs in India is not able to utilizing its full potential because of obsolete technology but globalization compelled MSMEs to adopt innovative methods and equip themselves with new technology. Application of new technology improves productivity of SMEs. This sector contributes a lot in rural industrialization and employment generation for rural poor which ensure the improvement in their standard of living. Technology plays a key role in the success of SMEs. For technological upgradation of the MSMEs and make them enable to strengthen their capabilities Ministry of MSMEs has recently launched ten innovative schemes under the National Manufacturing Competitiveness Programme. This program is also for improving the process, design, technology and market access of the MSMEs. The various organizations under the Ministry of MSMEs provide opportunities to sellers to display their products in exhibitions. Further National Small Industries Corporation (NSIC) has launched B2B web portal to provide marketing facilities.

INFORMATION TECHNOLOGY AND INCLUSIVE GROWTH

Inclusive Growth is a political, social and economic necessity. Ensuring this growth would require action in which information technology would play a key role. Information technology now a day emerged as a key driver of economic growth. Digitization can help in sustainable development of rural economy in all aspects. In Northeast India which is the place of large number of tribal people establishment of web-based technology, Community Information Services (CIS) become helpful in improving the health and socioeconomic status of residents in these areas and help Indian government to narrow the digital divide between rural and urban people. ICT could do wonders in improving productivity in agriculture and the service sector, while boosting access to some basic services among the rural population. Applications of Information and communication technology, such as mobile banking, can support both growth and inclusion. ICT sector mainly provide opportunities for skilled elite but ICT has more potential for innovation that benefits middle class and lower middle class. Mobile is the best example of technology whose falling cost make it accessible for Indians of all income classes. Cheaper access devices like phones and PCs that can be shared real time would change the landscape for millions of people. Fortunately, investment in telecom infrastructure is resulting in the increase in the number of users. Joint ventures between telecommunication and banks could provide inclusive banking and supply chain benefits to millions of people on a profitable basis.

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IMPACT OF TECHNOLOGY ON WOMEN

India is a male dominant society in which women held back for ages. Since last some years technology revolution especially in the form of cloud, broadband, wifi, mobile devices, social media and internet not only increased accessibility of mobile and internet by rural women but also provide them opportunity to utilize their potential. Due to this, India's rank in Global Gender Equality Report published by the World Economic Forum became 108th out of 144 nations. Google's Internet Saathi program also created women ambassadors called Saathi to provide training and educating women about the use of internet in their day to day activities. Through technology rural women get their way to enhance socioeconomic position in society which can transform their lives.

CHALLENGES IN ACHIEVING INCLUSIVE GROWTH

Apart for being a 62 year old democracy with over a billion people India is a land of vast disparities in socio-economic conditions therefore the growth is far from inclusive. Government launch various schemes for the benefits of socially unsecured population but due to corruption exist in administration proper implementation of these programmes is a big challenge. Concept of inclusive growth starts from agriculture. In reality small and marginal farmers are the least beneficiary because they are small landholders and they face difficulties in getting economies of scale, accessing credit and getting market oriented from their subsistence level. Deforestation for technological development is also a challenging issue because rural poor especially women's depends on nature for their day to day life and cutting of trees leads to low rainfall and low productivity. Most of the government policies benefiting large farmers are having large landholdings. In rural areas 25% of Indian adults cannot read or write. Geographical application of new technologies is still limited in rural areas. Due to lack of literacy, basic computer knowledge many farmers remain unaware of these advances. Benefits of technological change have been limited to a small section of the people, who are the participants in the global knowledge economy. Distances, roads, illiteracy, poverty comes as obstacles in providing financial services in rural areas at minimum cost. Many issues like lack of access to healthcare, education, banking facilities, internet and mobile connectivity also increase migration from rural to urban areas.

MEASURES

In India there is large disparity between rich and poor, rural and urban. India is investing a huge amount on digital learning. It is estimated by Technopak, a consultancy that the Indian digital learning market will almost become triple between 2016 and 2020 growing from $2billion to $5.7billion. There is biggest gender gap in employment, banking and access to the internet. In 2014 according to the government survey it was found that only 9% of women know about searching internet and sending email. To resolve this issue many companies like Google's parent Alphabet, Telenor ASA, Norwegian IT Company are taking initiatives for gender inclusion. Alphabet has appointed 9000 female tech trainers on bicycles in rural India to train women about smart phones, tablets and accessing internet. Government's remarkable initiative of Digital India improved the life of many rural people across the length and breadth of the country. Digital India Programme aimed at bridging the gap between haves and have nots. This program is also aimed to provide connectivity for every citizen through fixed-line broadband, mobile connectivity or Wi-Fi hotspots. The 11th e-Governance National Summit with the theme 'Inclusive Growth through Digital Empowerment' is another step in that direction. International Finance Corporation focuses in India in several significant areas to achieve inclusive growth. IFC invested in Financial Information Network & Operations Private Ltd (FINO), a startup provider of technology services will enable India's to provide banking and financial services in rural areas. It also provide India an opportunity to bridge the gap between large financial services and many underserved people. IFC and FINO play an important role in adoption of IT technologies in India's underserved markets and provide training in local dialects which definitely helps in enhancing the banking services for those people and areas which are deprived of financial services. The Common Service Centers reduce disparity between rural and urban India through proper use of technology by extending services like primary healthcare, banking and education to the rural population. Better planning and judicious use of technology will help India to achieve inclusive growth.

SUGGESTIONS

1. There is a need to increase accessibility of IT application in rural sector.
2. Technology should be developed in such a way that it can create jobs in rural areas which can improve the life of the rural people.
3. More investment in rural education is required.
4. Proper inspection of successful implementation of poverty eradication programs in rural areasis needed.
5. Make computer education more affordable for rural population.

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6. To educate and convince village representative about the benefits of the technological change is needed.

7. More investment in rural infrastructure is required to achieve inclusive growth.

CONCLUSION

India's large population constitute by rural population. We can't neglect rural population to achieve the objectives of technological development. Inclusive growth is broader concept than mere economic growth. To achieve inclusive growth it is must that technological development should reach rural areas and weaker sections of the society. To strengthen the rural economy many remarkable steps were taken in agricultural sector. Ministry of MSME sector are also taking various efforts for technological upgradation which also leads to the increase in the income of the rural poor who are associated with these industries. ICT sector is also doing wonders through digitization and increase accessibility for those who were beyond the reach of the technological development. Technological development also provides lots of opportunity for women to improve their socioeconomic position. Despite various efforts taken in the direction of inclusive growth, India is far from achieving the goal of complete inclusive growth. Better planning and judicious use of technology is needed to achieve inclusive growth.

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which are prescribed with several other medicines of Ayurveda. Therefore, we can say that Nanotechnology was existing from ancient time. But it was not known as Nanotechnology.

The concept of nanotechnology was discussed for the first time in 1959 by renowned physicist Richard Feynman in his popular talk "There's Plenty of Room at the Bottom". In his speech he described the possibility of synthesis via direct manipulation of atoms but the term

term was introduced in 1974 by Norio Taniguichi of Tokyo Science University while describing semiconductor processes such as thin-film deposition that deals with control on the order of size of particles in nanometers. His words to define nanotechnology was- *"Nano-technology mainly consists of the processing of separation, consolidation, and deformation of materials by one atom or one molecule."*

APPLICATIONS OF NANOTECHNOLOGY

As we know that nanotechnology is a technology dealing with the materials or particles of nano size. These nano-particles through technology has explored a wide range of applications in the field of energy, data storage, medicine and drugs, food, agriculture, defense and security, bio engineering, fabrics and cosmetic industries. Following are some of the predominant applications of nanotechnology/nano materials.

1. Nanotechnology has enhanced data storage capacity of memory devices like hard discs, memory chips due to use of magneto resistance heads by adopting science of magneto resistance. Metallic silver particles are used to coat the surfaces for optical storage applications too.
2. There are lots of biomedical applications of Nanomaterials. The technology helps in the fabrication of Stronger, lighter, biocompatible, multifunctional devices. In addition to this, nano particles are electrically so active that they inhibit the growth of harmful bacteria and fungus.
3. Nontechnology has developed Varity of products such as the nanosilver seal refrigerator and washing machines that use nano-coating to create germ-free environment. Nanomaterials have also been incorporated in clothing world with wrinkle free and stain repellent threads and fabrics that can repel water too. These cloths can remain cool in summer and hot in winter. This is by attaching molecular structures to cotton fibers to prevent absorption.
4. Nano materials are helpful in produratccing protective coatings , antireflection, scratch resistant, glare reducing and fog-resistant coating for eyeglasses, windshields and sunglasses.
5. Silver nano particles are used in deodorizer unit and water dispenser to sterilize air and water.
6. Nano-composite materials are useful in sports applications also. Many sports products such as high power tennis rackets, yachts and golf clubs.
7. Nanomaterials are useful in the field of infrastructure development too. Nano-cement composite are found to be much stronger than the conventional cement.
8. Some of the nano-composites when added to alloy increase it strength therefore such materials are useful in various defense applications.
9. Titanium nano powders are useful in solar cell applications. They have self cleaning ability too. Certain selenide nano compounds have applications in Photovoltaic. Diamond nano-coatings find applications in thermal management and water resistance. Ceramic nanoparticles show property of super elasticity.
10. Nanotechnology has applications as thermal barrier and wear resistant coatings, high strength high-weight composites for increasing fuel efficiency, high temperature sensors, improved displays, battery technology and wear resistant tyres.
11. Nanomaterials have been used for drug delivery. Nanostructured coatings are deposited on human body implants like screws, plates, rods etc allowing devices to last longer without corrosion.
12. Nanotechnology has wide application in the field of Cosmetics too. Many cosmetic materials contain nanoparticles which activate ingredients to go deep into skin layers. Now a days sun screen lotions are made up of nano dispersed Zinc Oxdies which provides broad spectral absorption range including ultraviolet.
13. The contribution of Nanotechnology in the field of surface Science is noteworthy. With the nano probes, the surfaces and interfaces can be probed at an atomic level, thus playing an important role in surface Physics and material Science. Nanotechnology provides a tool to serve as powerful platform for scientific research and manufacturing technology. Many high resolution microscopes have been designed using nano

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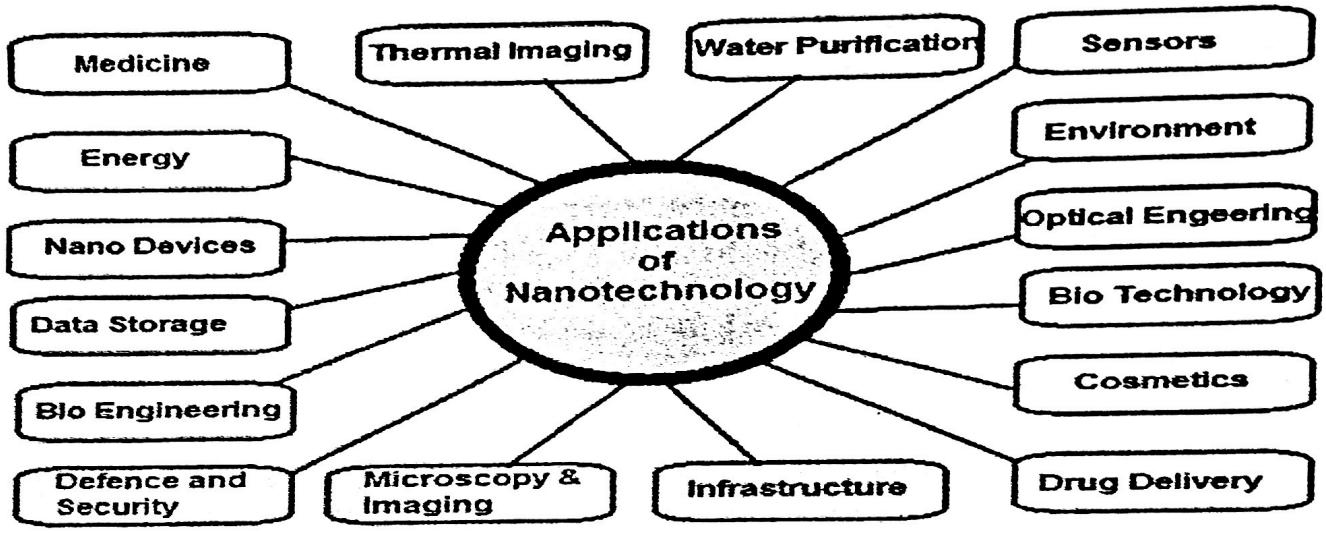
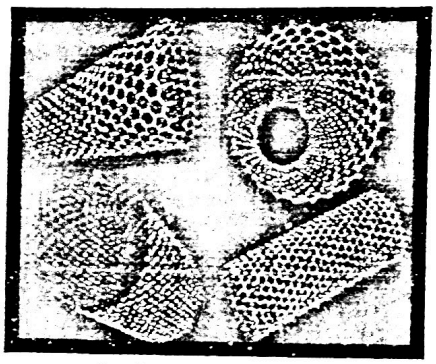
probes. Atomic Force Microscope (AFM) , Scanning electron Microscope (SEM) and Tunneling Electron Microscope (TEM) are result of Nanotechnology.

14. Nanotechnology plays an important role in the Energy production and Environment too. Energy production needs clean, less expensive sources. It can be brought about by novel Nanomaterials with high efficiency. Solid state lighting is beneficial in the sense that it reduces total electricity consumption and helps sustain the green environment. Light Emitting diodes are examples of such low power consumption and environment friendly source of light energy. One of the other example is that of Solar Cells which can be integrated from nanoscale crystals of semiconductors coated with light absorbing, dye-emitting electrons. Nanostructure diamond solar thermal cells are also an nanotechnology based source that capture slight and heat from the lattice, thereby emitting electrons. Nanotechnology has wide application in the field of Cosmetics too. Many cosmetic materials contain nanoparticles which activate ingredients to go deep into skin layers. Now a days sun screen lotions are made up of nano dispersed Zixnc Oxdies which provides broad spectral absorption range including ultraviolet. The Figure below indicates a broad picture of applications of Nanotechnology in various fields.

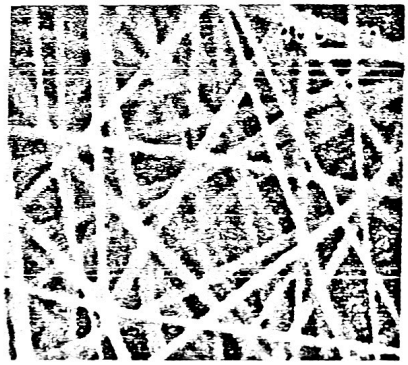


CARBON NANOTECHNOLOGY

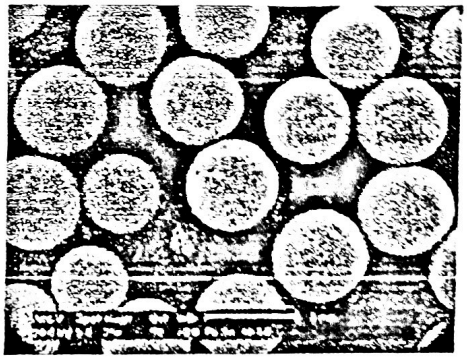
An extraordinary and versatile ability of carbon as opened a new field in nanotechnology popularly known as carbon nanotechnology. Various forms of carbon in nano forms are Carbon Nano Tubes (CNTs), Carbon Nano Fibers (CNFs), Carbon quantum Dots etc. All these forms of carbon have different applications in Nanotechnology. The most common crystalline forms of carbon, Cubic diamond and hexagonal graphite are classical examples of allotropy. Both diamond and graphite exist in two minor crystallographic forms: hexagonal diamond and rohmobohedearal graphite. Later fullerene, CNTs and grapheme were added to the list of crystalline allotropes of carbon, Thus, carbon became the unique element in the periodic table that hasan allotrope in all the dimensions.



Carbon Nano Tubes



Carbon Nano Fibers



Carbon Nano beads

Sharon et al have reported various applications of carbon Nano materials like Solar Cell, Hydrogen Storage, Fuel Cell, Super Capacitor, Microwave absorption. It is interesting to know that all the carbon nano materials synthesized by this group were developed using natural precursors. Dubey et al from the same group have reported an interesting application of Carbon material derived from waste coconut shell as filament of bulb analogous to Tungsten.

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FUTURE APPLICATIONS OF NANOTECHNOLOGY

From the above discussed applications it is evident that Nanotechnology is an emerging technology expected to have rapid and strong future developments. It is also predicted that this technology can contribute significantly to economic growth and job creation in the the coming decades. According to scientists, nanotechnology is likely to have four distinct generations of advancement. We are currently experiencing the first, or maybe second generation of Nanomaterials. The first generation of materials has properties that are achieved by the incorporating "passive nanostructures". This can be in the form of coatings and/or the use of carbon nanotubes /fibers to have utility in various fields . The second generation makes use of active nanostructures, for example, by being bioactive to provide a drug at a specific target cell or organ. This could be done by coating the nano particle with specific proteins. This generation has exhibited various applications as discussed above. The complexity advances further in the third and fourth generations. Starting with an advance nano system like nano-robotics which is future engineering and moving on to a molecular nano system to control growth of artificial organs and genes in the fourth generation of nano materials.

CONCLUSION

It is very much evident from the literature that the Science has progressed in last 3-4 decades very rapidly. The advancement in the different branches of Science has resulted into development of different technologies. With the growing technology and constraints in the land and infrastructure, it has become dire need of the society to have smaller size of all kinds of goods. And that is the reason the technology has also shifted from Semi to Mili to Micro to Nano. Days are not far that Pico technology is come into market after the saturation of Nano Technology too. But it will not happen suddenly. With the existing nanotechnology it is expected that almost all branches of engineering right from Electronics, Medicine to Robotics will be nanotechnology based because of its efficiency, durability, reliability and reproducibility. Therefore we can conclude with this paper that Nanotechnology is the future engineering.

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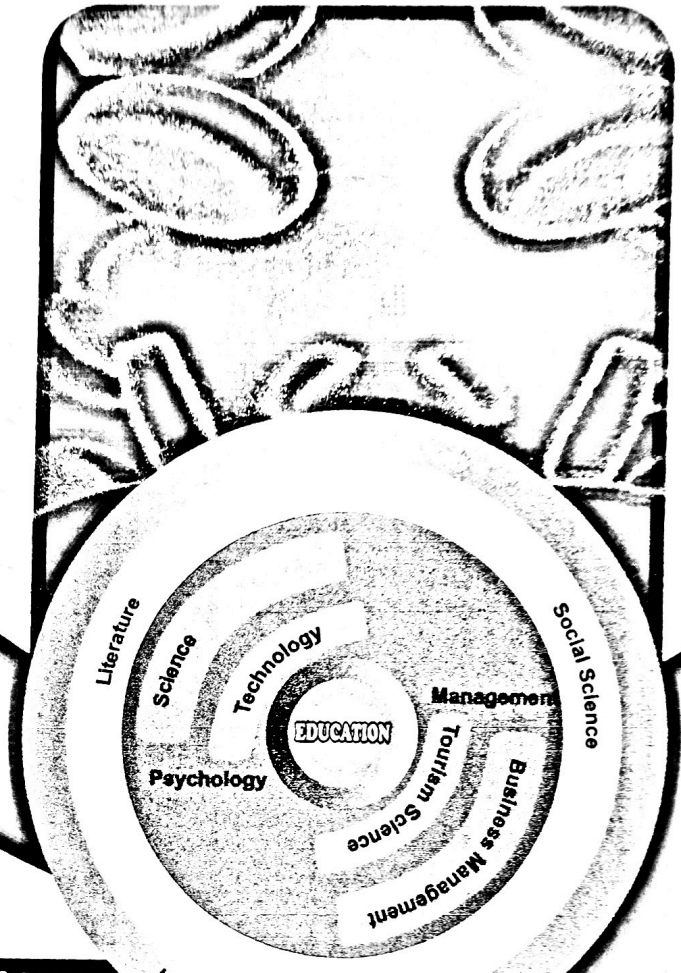

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OCT-DEC, 2017, VOL-6, ISSUE-34

... S. Shikhare (173-176)

... TECHNOLOGY IN BANKING SECTOR IN INDIA

... S. Shikhare

... Swayam Siddhi Mitra Sangh's Degree College, Bhiwandi.

...troduction:

... new technology in banking has added a different dimension to the banking sector. The ...nological development in banking can be traced as follows:-

... - Mechanized banking introduced.

... - Introduction of computer based banking industry.

... - Introduction of computer-linked communication based banking.

... per the reports of RBI the first wave in banking technology began with the use of Advanced Ledger ... Machines (ALPM) in the 1980s. The RBI advised all the banks to go in for huge ...puterization at the branch level. The **Second wave of development** was Total Branch Automation ... which came in late 1980s. In the **third wave**, the new private sector banks entered into the field ... automation. The **fourth wave** started with the evolution of the ATM delivery channel. The various ...vations in banking and financial sector are ECS, RTGS, EFT, NEFT, ATM, Retail Banking, Debit ... Credit Cards, free advisory services, implementation of standing instructions of customers, payments ... bills, fund transfers, internet banking, telephone banking, mobile banking, selling insurance ... issue of free cheque books, traveler's cheques and many more value added services. The ... has been very productive for banks bringing in an increase in productivity and operational ...ency to be more competitive. Better risk management due to centralization of information and real ...ailability of critical data for decision making.

... Objectives of the Study

... study the various financial innovation in banking sector.

... study the changing scenario of Indian banking.

... study the advantages of e banking to the customers in India.

... Innovation in banking sector

... we have electronic payment system along with currency notes. India's financial sector is moving ... a scenario, where it can have new instruments along with liquidity and safety. Important stages ... evolution of new age payment systems in India are as follows.

- ... Arrival of card - based payments- debit card, credit card- late 1980's and early 1990's.
- ... Introduction of Electronic Clearing Service (ECS) in late 1990's
- ... Introduction of Electronic Funds Transfer/ Special EFT (EFT/SEFT) in the early 2000's
- ... Real Time Gross Settlement (RTGS) was introduced in March 2004
- ... Introduction of NEFT (National Electronic Funds Transfer) as a replacement for EFT/SEFT in 2005/06

...ronic fund transfer system became necessary due to the large volumes of transaction, high cost of ... handling and storage of paper instruments, delay in realization is a common feature and ... takes time. RBI has taken two major steps to tackle this problem. i) Use of Magnetic Ink ...acter Recognition (**MICR**) technology and ii) Introduction of Electronic Clearing Service (ECS).

... E-Banking Services Introduced by Banks in India: Information technology offers a chance for ... to build new systems that address a wide range of customer needs including many that may not be ...inable today. Following are the innovative services offered by the industry in the recent past:

1. Computerization in Banks: Technology has charged the face of the Indian banking sector through computation, while new private sector banks and foreign banks have an edge in this regard. Among the total number of public sector bank branches, 97.8 percent are fully computerized at end of March 2010 whereas all branches of SBI are fully computerized.

2. ATM: ATMs are an issue of survival for the banks and are becoming just another part of everyday life. The Automated Teller Machine is an effective delivery channel, which play a vital role in consumer satisfaction and cost control of transaction of banks. ATM card is magnetic stripe card which operate with particular PIN Number. ATM card is used for balance enquiry, cash withdrawal fast cash updating of cash book, utility bill payments etc.Banks are now using ATMs for product promotion as banks market broader financial services to their captive audience of ATM users. Total number of ATM In the year 2013 was 114,014 and increased as 160,055 in the year 2014.

3. NEFT/RTGS: Real Time Gross Settlement system, introduced in India since March 2004, is a Interlink Research Analysis system through which electronics instructions can be given by banks to transfer funds from their account to the account of another bank. NEFT means national electronic fund transfer system and RTGS means Real Time Gross Settlement System which enables an effective service, economical and reliable system of transfer of funds from bank to bank as well as from remitter's account in a particular bank to beneficiary's account in another bank across the country. IT is useful to customers to transfer funds from one bank branch to another branch and also another bank.

4. Internet Banking: Internet banking is a retail banking which enables customers to operate his account from anywhere and anytime. Internet banking provide fund transfer, credit PPF Account, request issue D.D., request for loan, utility bill payments , online bill payments, online ticket booking, online share trading, credit card payment, LIC premium payments, online donation etc services are internet banking services. The Internet has emerged as one of the major distribution channels of banking products and services for banks. Consumers are embracing the many benefits of internet banking like improved customer access which facilitates the offering of more services and attract new customers.

Advantages of Internet Banking:

i) With e-banking services, one can actually carry out a number of transactions sitting on one's seat with just a few clicks.

ii) Customers view their account balance and also open fixed deposits, transfer funds, pay electricity, telephone or mobile phones bills and much more.

iii) The accounts of the customers are updated as soon as the transaction takes place i.e., the accounts show the information updated to the last second.

iv) Lesser staff required to the banks for its day to day operation system.

v) Online banking has encouraged peopleto carry out their bank transactions from a distance.

5. Mobile Banking: Mobile banking services is provided by banks on request of customers. This service is provided with secure ID and password to customers mobile banking offer fund transfer, immediate payments service, cheque book request, bill payments, mobile and DTH recharge, e commerce transactions etc.

6. SMS Banking: This service is provided with the help of mobile phone of the customers. It offers balance enquiry, last three transactions statements, cheque status and alert for password generations etc.

7. Telephone Banking: Bank provides this service with the help of telephone to customer's services is provided with secure ID and TPIN number. Telephone banking provides balance enquiry, last three transaction statements, cheque status enquiry, change of TPIN etc service.

8. Cards Facility: Banks provide different debit cards and credit cards facility. With the use of these cards customer can purchase, can make ecommerce transaction, and also can pay bills etc. The total

number of credit cards issued by all commercial banks in the year 2013 was 20 million and decreased as 19 million in 2014 i.e reduced by 1.7 %

9. Electronic Payment Services - E Cheques: Nowadays we are hearing about e-governance, e-mail, e-commerce, e-tail etc. In the same manner, a new technology is being developed in US for introduction of e-cheque, which will eventually replace the conventional paper cheque. India, as harbinger to the introduction of e-cheque, the Negotiable Instruments Act has already been amended to include; Truncated cheque and E-cheque instruments.

10. Electronic Clearing Service (ECS): Electronic Clearing Service is a retail payment system that can be used to make bulk payments/receipts of a similar nature especially where each individual payment is of a repetitive nature and of relatively smaller amount. This facility is meant for companies and government departments to make/receive large volumes of payments rather than for funds transfers by individuals. In the year 2009-10 the total number of ECS credit and debit transactions was 1, 17,833 and 69,819 respectively.

Advantages of ECS – Credit

i) No need to make frequent visits to bank for depositing physical paper instruments.
ii) No possibility of loss of instrument and fraudulent encashment.
iii) No chance of delay or return in realization of proceeds as in the case of paper instruments.
iv) Save on administrative machinery for printing, dispatch and reconciliation.
v) Avoid the chance of loss of instruments in postal transit.
vi) Avoid the chance of frauds due to fraudulent access to the paper instruments and encashment.
vii) It can be ensured that the beneficiary's accounts get credited on a designated date.

Advantages of ECS - debit

i) Eliminates the need of physical visit and the trouble of standing in long queues for making payment.
ii) There is no need to track down payments by last dates.
iii) Saves on administrative machinery for collecting the cheques, monitoring their realization and reconciliation.
iv) Better cash management.
v) Avoids chances of fraud.
vi) Receives payments on a single date.

These schemes were introduced when Indian banking was in infant stage of its computerization hence cost benefits could not be maximized.

11. Tele Banking: Tele Banking facilitates the customer to do entire non-cash relatedbanking on telephone. Under this devise Automatic Voice Recorder is used for simpler queries and transactions. For complicated queries and transactions, manned phone terminals are used.

12. Electronic Data Interchange (EDI): Electronic Data Interchange is the electronic exchange of business documents like purchase order, invoices, shipping notices, receiving advices etc. in a standard, computer processed, universally accepted format between trading partners. Electronic Data Interchange (EDI) can also be used to transmit financial information and payments in electronic form.

VI) Energy Management and Move towards 'Green Technology': Most of the banks are conscious of the carbon foot print generated and are working towards energy management and use of 'Green Technology'. Some of the measures adopted are:

Adoption of Server Virtualization technologies to save on

- floor space, power & cooling components,

- Use of Data center enhancements and Best practices for optimum usage of space, hot air/cool air pockets etc.,
- Up gradation of older power hungry Servers, Storage and
- Networking equipments.
- Solar powered ATMs
- Use of windmill energy
- Energy management and adoption of green technology willbecome increasingly important in the future and banks will have to streamline efforts towards accurately monitoring, measuring and optimizing the energy consumption.

VII. Conclusion: Over the last three decades the role of banking in the process of financial intermediation has been undergoing a profound transformation, owing to changes in the global financial system. The various innovations in banking and financial sector are ECS, RTGS, EFT, NEFT, ATM, Retail Banking, Debit & Credit Cards, free advisory services, implementation of standing instructions of customers, payments of utility bills, fund transfers, internet banking, telephone banking, mobile banking, selling insurance products, issue of free cheque books, traveler's cheques and many more value added services. Information Technology does promise to change the pace of banking to the next few years. Mobile bank and internet banking are going to make indoor in the banking sector in the near future.

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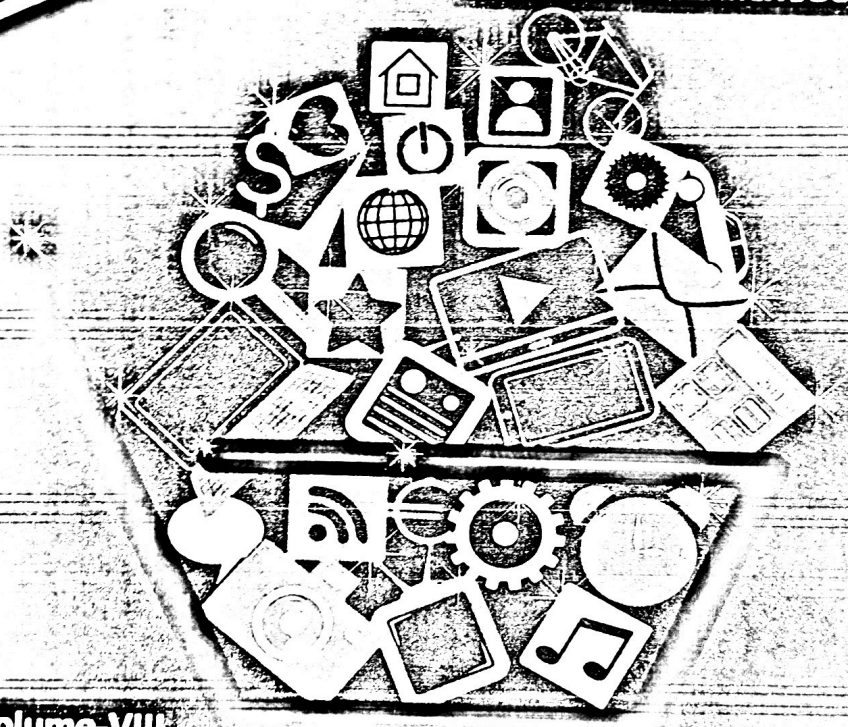

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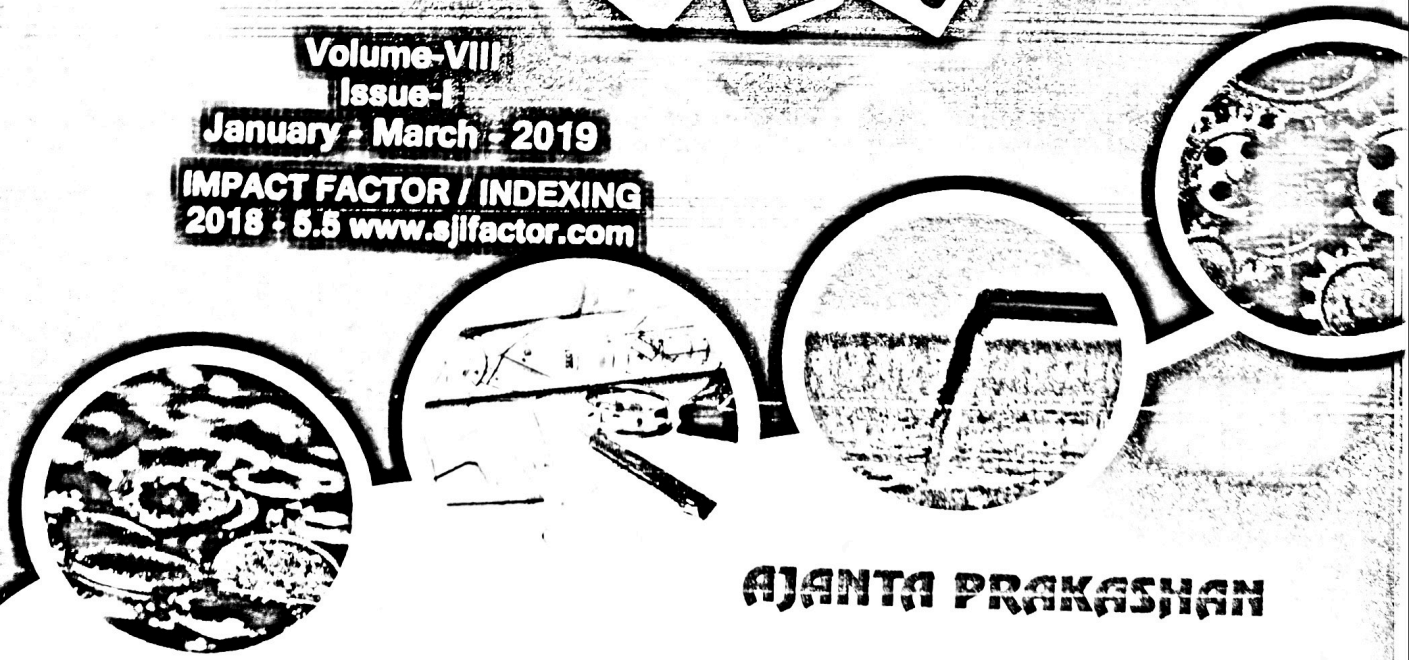

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2. An Overview on National Skill Development Corporation

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Abstract

National Skill Development Corporation is a Public Private Partnership Model aim to uplift the youth with skills which helps them to get employed. Mainly five schemes are initiated by NSDC which are covered in this paper. These are Pradhan Mantri Kaushal Vikas Yojna, Pradhan Mantri Kaushal Kendra, UDAAN, International Skill Training and Technical Intern Training Program. It provides more services which helps for the upliftment of society especially in rural areas and not covered in this paper. The achievements of NSDC shows its contribution for upgrading the economy.It has more than 5.2 Million students trained under their schemes.

Key words: National Skill Development Corporation (NSDC), Schemes, Objectives, Achievements.

Introduction

National Skill Development Corporation (NSDC) was set up by Ministry of Finance as Public Private Partnership (PPP) model. NSDC is a not-for-profit public limited company incorporated on July 31, 2008 under section 25 of the Companies Act, 1956 (corresponding to section 8 of the Companies Act, 2013). The Government of India through Ministry of Skill Development & Entrepreneurship (MSDE) holds 49% of the share capital of NSDC, whereas balance 51% of the share capital is owned by the private sector.

NSDC acts as a catalyst in skill development by providing funding to enterprises, companies and organizations that provide skill training. It aims to promote skill development by catalyzing creation of large, quality and for-profit vocational institutions. Further, the organization provides funding to build scalable and profitable vocational training initiatives. Its mandate is also to enable support system which focuses on quality assurance, information systems and train the trainer academies either directly or through partnerships. The differentiated

focus on 21 sectors under NSDC's purview and its understanding of their viability makes every sector attractive to private investment. Data as per December 2018 reports, NSDC has 449 training partners, 12866000 trainees trained by them, 6701 training centers and 38 sector skill council.

The main objectives of the NSDC are to:

- Upgrade skills to international standards through significant industry involvement and develop necessary frameworks for standards, curriculum and quality assurance
- Enhance, support and coordinate private sector initiatives for skill development through appropriate Public-Private Partnership (PPP) models; strive for significant operational and financial involvement from the private sector
- Play the role of a "market-maker" by bringing financing, particularly in sectors where market mechanisms are ineffective or missing
- Prioritize initiatives that can have a multiplier or catalytic effect as opposed to one-off impact.

Objective of the Study

- To understand NSDC
- To recognise its importance.
- To create awareness about the facilities or schemes of NSDC.

Methodology of the Study

The study is purely based on Secondary data which includes Published and unpublished sources like Magazines, Public books, websites, and conference papers.

Vision, Mission and Objective

Vision: NSDC was established to fulfill the growing need in India for skilled manpower across sectors and narrow the existing gap between the demand and supply of skills. The Union Finance Minister Shri P. Chidambaram announced the formation of the NSDC in his 2008-09 Budget Speech, "There is a compelling need to launch a world-class skill development programme in a mission mode that will address the challenge of imparting the skills required by a growing economy. Both the structure and the leadership of the mission must be such that the programme can be scaled up quickly to cover the whole country."

Key focus areas of the IISC Policy

- Assessment and Certification on international standards as per best practices and recognition in different countries.
- IISCs to have Career Guidance and Counseling centers within them ie. International training and employment and act as resource centers facilitating foreign employment support. The counseling centers would help students to understand the various overseas employment opportunities available and match their interest and talent with the most relevant opportunities.
- IISCs as per new policy are expected to provide only incremental skill training if found lacking in candidates.
- PDOT will be imparted to IISC candidates as sponsored by MEA under PKVY.

E. Technical Intern Training Program

MSDE has established its institutional framework for Technical Intern Training Program (TITP) implementation and has appointed National Skill Development Corporation (NSDC) to be the Implementing and Monitoring Agency for the program.NSDC is steering impactful execution of the program in India and Japan. It has empanelled over 20 Sending Organizations to drive the desired agenda of training the youth, who will advance their careers and contribute towards economic progress of the respective countries. MSDE, Govt. of India and the ministry of justice, Ministry of Foreign Affairs and Ministry of Health, Labour and Welfare of Japan signed a Memorandum of Cooperation initiating the Technical Intern Training Program (TITP) in India in October 2017.

Achievements

- Over 5.2 million students trained
- 235 private sector partnerships for training and capacity building, each to train at least 50,000 persons over a 10-year period.
- 38 Sector Skill Councils (SSC) approved in services, manufacturing, agriculture & allied services, and informal sectors. Sectors include 19 of 20 high priority sectors identified by the Government and 25 of the sectors under Make in India initiative.
- 1386 Qualification Packs with 6,744 unique National Occupational Standards (NOS). These have been validated by over 1000 companies.

- Vocational training introduced in 10 States, covering 2400+ schools, 2 Boards, benefitting over 2.5 lakh students. Curriculum based on National Occupational Standards (NOS) and SSC certification. NSDC is working with 21 universities, Community Colleges under UGC/AICTE for alignment of education and training to NSQF.
- Designated implementation agency for the largest voucher-based skill development program, Pradhan Mantri Kaushal Vikas Yojana.
- Skill Development Management System (SDMS) with 1400 training partners, 28179 training centres, 16479 trainers, 20 Job portals, 77 assessment agencies and 4983 empanelled assessors. Hosting infrastructure certified by ISO 20000/27000 supported by dedicated personnel.

Conclusion and Recommendation

The study shows the performance of NSDC for providing skills to needy and backward public targeting youth of the nation. The schemes initiated and implemented are supportive to those who are drop outs. These schemes are designed and implemented by Indian Government as per the requirement in rural areas. The government is putting its large effort for filling the gap between rich and poor Indian Citizens. However, yet more awareness is required to create among needy public in rural areas about these schemes so they can avail the maximum benefit from it.

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20. Water Conservation and Management

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Abstract

The earth's growing population along with its multifaceted activities demanding fresh water is now putting this vital resource under increasing pressure. According to World Bank estimates, by the year 2025, one person in three will live in conditions of water shortage. Much of the world's fresh water is consumed by the domestic, agricultural and industrial sectors. The failure in efficiently managing this resource to meet the increasing water demands of these sectors has resulted in a situation of crisis in many parts of the world. With only 1% of water available for human consumption, we must treat our water supply with more respect. Water conservation should not be considered an option any longer but is an inescapable necessity. Therefore, it is extremely important to seek out, find and start using all the innovative water conservation solutions and methods that are available today. Hence the objectives of this study are to study the water conservation practices, to study the need and types of rain water harvesting and to suggest policy implications for water resource management in India. This paper highlights water conservation practices in domestic sector and agriculture sector.

Key Words: water conservation, Rain water Harvesting, ground water, Water Audit

I) Introduction

No other natural resource has had such an overwhelming response on the history of mankind as much as Water. As human population increases, the desire for a better standard of living will increase the demands on fresh water resources. Water is one of the fundamental resources and indispensable element of life on the earth, as rightly stated by Goethe that 'everything originated in the water and everything is sustained by water'.

The earth's growing population along with its multifaceted activities demanding fresh water is now putting this vital resource under increasing pressure. According to World Bank estimates, by the year 2025, one person in three will live in conditions of water shortage. Much of the world's fresh water is consumed by the agricultural, industrial and domestic sectors. The

failure in efficiently managing this resource to meet the increasing water demands of these sectors has resulted in a situation of crisis in many parts of the world. In many parts of India, fresh water crisis already existed. e. g. Kaweri dispute.

Water being unevenly distributed over the land, influences inter-state and international relations and so is the cause of **'Hydro politics'**. Already its footprints are noticed with conflicts increasing at local, regional, national and international levels. The United Nations therefore declared 2003 as the International Year of Fresh water. With only 1% of water available for human consumption, we must treat our water supply with more respect. Water conservation should not be considered an option any longer but is an inescapable necessity. Current circumstances require our full attention, if we hope to thrive as a civilization. Much of the world is currently suffering due to a lack of clean water. A recent **World Water Development Report** ranked India 133rd among 180 countries in terms of water availability and 120th among 122 countries in terms of water quality. Millions of households in urban areas wake up in the pre-dawn to fill water as the municipal supply is only for few minutes/hour in a day. Therefore, it is extremely important to seek out, find and start using all the innovative water conservation solutions and methods that are available today.

II) Objectives

1. To study the water conservation practices.
2. To study the need and types of rain water harvesting.
3. To suggest policy implications for water resource management.

III) Water Conservation Practices

To restore the fast deteriorating eco- system and to meet the inevitable emergency of shortage even for drinking & domestic water in the near future. Water conservation: aims at matching demand & supply. Followings are some goals of water conservation.

a) **Sustainability:** To ensure availability for future generations, withdrawal of fresh water from an ecosystem should not exceed its natural replacement rate

b) **Energy conservation:** Water pumping, delivery, & wastewater treatment facilities consume a significant amount of energy. About 15% of total electricity consumption is devoted to water management.

c) **Habitat conservation:** Minimizing human water use helps to preserve fresh water habitats for local wildlife and migrating waterfowl, as well as reducing the need to build new dams and other water diversion infrastructures.

Rainfall in India shows great variations with unequal seasonal and geographical distributions and its frequent departure from the normal position. The entire western coast and Western Ghats, most of the Assam and the Sub-Himalayan and West Bengal receive more than 250 cm. rainfall, but it decreases rapidly from 50 cm. in Delhi to less than 15 cm. in Rajasthan to the extreme west. This shows the urgent need for water conservation practices. These practices can be brodly devided in top three parts as follows.

a) Domestic Water Conservation Practices

Other Methods to initiate Water Conservation would include, public outreach programmes, nuked and community dramas and water audits. Rainwater harvesting is one of the most successful techniques being used in India.

The best place to start water conservation is one's own house. Certain measures which can be adopted at home are:-

i. Ensure that there are no leaks in your house, in the pipelines, taps and toilets.
ii. Use water efficient flushes and if possible, toilets with dual flushing systems.
iii. Close taps while brushing your teeth, shaving or soaping your face.
iv. Use water from washing of clothes for cleaning floors.
v. Use appropriate amount of detergent for washing clothes.
vi. Close the shower tap whilst soaping your body.
vii. When washing dishes by hand, don't let the water run while rinsing.
viii. Monitor your water bill for unusually high use. Your bill and water meter are tools that can help you discover leaks.
ix. Water your lawn and garden in the morning or evening when temperatures are cooler to minimize evaporation.

b) Agricultural Water Conservation Practices

Water saving irrigation practices fall into three categories, field practices, management strategies and system modifications. Practices such as drip irrigation can save large quantities of water. Careful and judicious use of water for irrigation can lead to irrigating much more land. A leading concern facing the future of agricultural production is the availability of water. It is

expected that climate change will cause more extreme climate events including droughts and floods and shifts in plant growing zones. As populations grow, more efficient use of water in growing food will be of key importance. Today, some 2.8 billion people live in water-scarce areas, but by 2030, it is expected that about half of the world's population will live in water stressed areas.

Past overuse of fossil water from aquifers will make it necessary to improve the efficiency of irrigation and rain fed agriculture methods to grow tomorrow's food. The increasing competition for water in urban areas and for energy uses will lessen what is now available for agriculture, estimated to be 70 to 80 percent of global fresh water use. As other interests gain a share of the fresh water supply, the production of food will need to increase at the same time that the water used to grow it decreases. Following measures can be adopted as a water conservation practices in agriculture.

I. Drip, or micro-irrigation
II. ii) Bottle irrigation and pitcher irrigation
III. iii) Drought tolerant crops and seeds
IV. iv) System of Crop Intensification (SCI) or System of Root Intensification (SRI)
V. v) Ripper-furrower planting system
VI. vi) Subsurface irrigation systems
VII. vii) Water storage
VIII. viii) Plastic buckets for starting young trees
IX. ix) Efficiency through center pivot irrigation
X. x) Rotational grazing systems
XI. xii) Gravity drip bucket irrigation systems for vegetable gardens
XII. xiii) Using less water to grow more
XIII. iv) Soil moisture sensors
XIV. xv) Good drainage
XV. xvi) Agro forestry
XVI. xvii) Reduce food waste

c) Industrial and Commercial Water Conservation Practices

The commercial sectors represent a major component of the Texas economy and our institutions form the backbone of the necessary services to make the economy work. These best

management practices and technologies have been identified for the commercial and institutional sectors to help reduce water and wastewater costs while improving water use efficiency. They are as follows.

i) Water reuse and recycling
ii) Cooling water recirculation
iii) Landscape irrigation
iv) Waterless urinals
v) Waterless car washes
vi) Pressurized water brooms, which can be used instead of a hose to clean sidewalks
vii) Water-saving steam sterilizers, for hospitals

IV) Rain Water Harvesting

Rainwater harvesting means capturing the runoff of the rainwater in our own house, village, town or city. It basically means accumulation and storage of rainwater for reuse, before it reaches the aquifer. Utilization includes water for garden, livestock, irrigation, etc. In many places, the water collected is just redirected to a deep pit with percolation. The harvested water can be used for drinking water also, if the storage is a tank that can be accessed and cleaned when needed.

Need for Rainwater Harvesting

India is in a state of water crisis, both in rural and urban areas. Floods and droughts go hand in hand in this country, which causes water scarcity. Rainwater is a pure form of water if stored properly and can greatly reduce the pressures on treated water supply. Rainwater harvesting is therefore extremely essential for the following reasons:-

a) It helps to recharge sub soil and groundwater thus increasing the level of the water table.
b) It helps to create large quantity of pollution free potable water that can be stored in huge tanks or ponds for use later on. In cities, it reduces the dependence on treated water supply to a great extant.
c) It ensures ready supply of water on the land surface thereby reducing dependence on the groundwater.

Types of Rainwater Harvesting Systems

There are a number of ways to harvest rainwater, ranging from very simple to the complex industrial systems. Generally, rainwater is either harvested from the ground or from a roof. The rate at which water can be collected from either system is dependent on the plan area of the system, its efficiency and the intensity of rainfall.

a) **Ground Catchment Systems.** Channelize water from a prepared catchment area into a storage system. Generally, this method is only considered in areas, where rainwater is very scarce and other sources of water are not available. They are more suited to small communities than individual families. If properly designed, ground catchments can collect large quantities of rainwater. This method is ideally suited for villages in rural India.

b) **Roof Catchment Systems.** Roof catchment systems channelize rainwater that falls onto a roof, into a storage tank via a system of pipes. The first flush of rainwater after a dry season, should be allowed to run to waste as, it will be contaminated with dust, bird droppings etc. Rain Water from the subsequent showers can be harvested. Storage tanks should be covered to prevent mosquito breeding and to reduce evaporation losses, contamination and alge growth. Rainwater harvesting systems require regular maintenance and cleaning, to keep the system hygienic and in good working order. This method is most suited for towns and cities.

c) **Subsurface Dyke.** A subsurface dyke is built in an aquifer to obstruct the natural flow of groundwater, thereby raising the groundwater level and increasing the amount of water stored in the aquifer. Example, the subsurface dyke at Krishi Vigyan Kendra, Kannur under Kerala Agricultural University with the support of ICAR, has become an effective method for ground water conservation by means of rain water harvesting technologies. The dyke is now the largest rainwater harvesting system in that region.

Groundwater Recharge

Rainwater may also be used to recharge groundwater where the rain fall on the ground is collected and allowed to be absorbed, adding to the groundwater. In India this includes Bawdis and Johads, or Ponds which collect the run-off from small streams in a wide area. In India, reservoirs called tanks were used to store water; typically they were shallow with mud walls. Ancient tanks still exist in some places.

V) Policy Implications

The Northern Rivers are always subjected to floods during monsoons and during early summers due to melting of snow in Himalayas. This water therefore needs to be carried to the drought stricken areas of Central and South India. All this water needs to be collected and stored so that it can be used during 'dry spell'.

Water Resource Regions

A river basin has a defined watershed boundary and also has relationship with ground water resources in most of the cases. The development of a balanced plan for water resources utilization requires full knowledge of the quantity, quality and distribution of water resources utilization and also the changing patterns of land use in the entire water shed and its influence on the river flows.

India has been divided into six river basins for the purpose of assessment of the available water resources as given below

Sr. No.	River Basin	States covered	Average Annual Rainfall (cm)	Catchment Area (million hectares)
1	Indus	J&K, Punjab, H.P., Haryana.	56	35
2	Ganga	U.P., Bihar, M. P., Rajasthan, West Bengal	111	100
3	Brahmaputra	Assam, Nagaland, Meghalaya & Bhutan.	120	51
4	East Coast	M.P., Mah, Andhra.P.Tamil Nadu.	109	120
5	West Coast	Guj, Mah., Karnataka, Kerela.	122	49
6	Rajputana region	Rajasthan	29	17

India's vulnerability of regional water scarcity is well illustrated by the case of Rajasthan with per capita water use in 1990 at 562 cu.m., a level of absolute scarcity. Even the regions receiving high rainfall in India often face drought for eg. Cherapunji of Meghalaya. Hence there is a need of efficient use of water resources.

Efficient Use of Water Resources

An important component of water conservation involves minimizing water losses, prevention of water wastage and increasing efficiency in water use. Adopting the measures

towards reduction of losses and management of supply through proper meter is necessary. Creation of awareness among the people to make attitudinal change and possibility of recycling and reuse must be exploited.

Following points are to be consider while using water

i) Reducing the demand by improving personal habits
ii) Reducing wastes
iii) Creating an adequate rate schedule
iv) Deriving benefits from technical developments as well as from water management techniques,
v) Coordinating the management of hydraulic resources
vi) Promoting norms and regulations

The main methods for water efficiency in Industry are: i) Recycling ii) Re use iii) Reduction in consumption. Two basic activities are necessary in all three cases: Measuring the amount and monitoring the quality of the water.

Water Audit

Water audit determines the amount of water lost from a distribution system due to leakage and other reasons such as theft, unauthorized or illegal withdrawals from the system and the cost of such losses to the utility. Comprehensive water audit gives a detailed profile of distribution system and water users, facilitating effective management of resources with improved reliability. It helps in correct diagnosis of the problem faced in order to suggest optimum solutions. It is also an effective tool for realistic understanding and assessment of the present performance level and efficiency of services & adaptability of the system for future expansion and rectification.

The amount of total water supply, water delivered to metered users, water delivered to un-metered users, water loss and suggested measures to address water loss. Water audit improves knowledge and documentation of the distribution system, Problem and risk areas and a better understanding of what are happening to the water after it leaves the source point

VII) Conclusion

Water is the only resource for which there is no alternative. Earth sustains life primarily because there is water available on the earth. Inefficient management of this important natural

resource has caused a situation of crisis in many parts of the worlds including India; therefore it is very important that we conserve this important resource.

Water Scarcity in India is largely man-made. It is the result of a short-sighted pricing policy for public water supply that encourages wasteful use of water and makes it difficult to raise resources for upkeep and expansion of the system. It is crucial to stop successive runoff by increasing the infiltration or by transferring it to regions of drought. It can be achieved only by massive forestation, planning and implementing inter-basin transfer and sustainable development without harming the natural surroundings. Thus India has to manage its water resources sensibly, optimally and equitably. It therefore calls for everything humanly possible to be done to guarantee sustainable use of fresh water.

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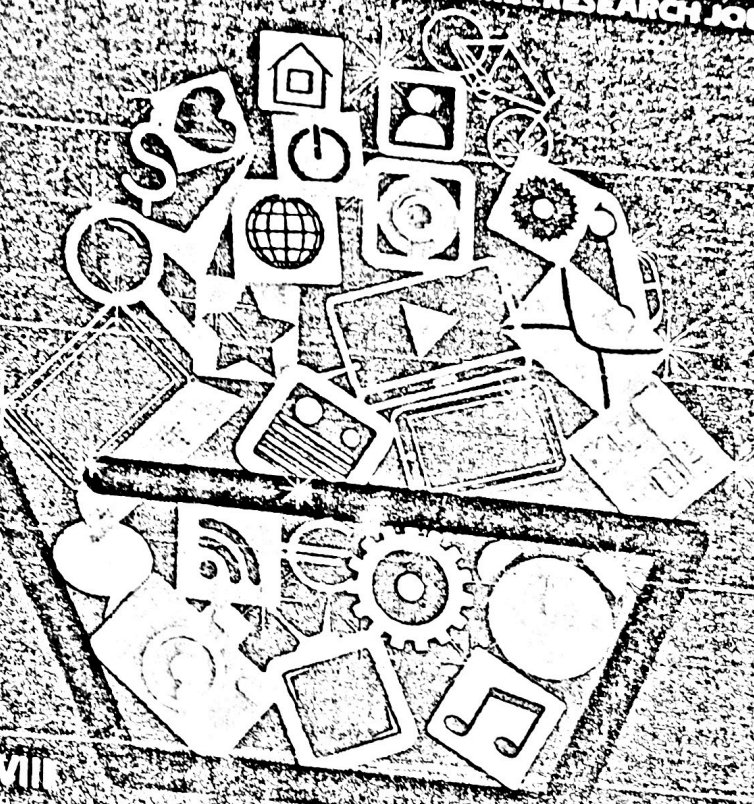

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Abstract

National Skill Development Corporation is a Public Private Partnership Model aim to uplift the youth with skills which helps them to get employed. Mainly five schemes are initiated by NSDC which are covered in this paper. These are Pradhan Mantri Kaushal Vikas Yojna, Pradhan Mantri Kaushal Kendra, UDAAN, International Skill Training and Technical Intern Training Program. It provides more services which helps for the upliftment of society especially in rural areas and not covered in this paper. The achievements of NSDC shows its contribution for upgrading the economy.It has more than 5.2 Million students trained under their schemes.

Key words: National Skill Development Corporation (NSDC), Schemes, Objectives, Achievements.

Introduction

National Skill Development Corporation (NSDC) was set up by Ministry of Finance as Public Private Partnership (PPP) model. NSDC is a not-for-profit public limited company incorporated on July 31, 2008 under section 25 of the Companies Act, 1956 (corresponding to section 8 of the Companies Act, 2013). The Government of India through Ministry of Skill Development & Entrepreneurship (MSDE) holds 49% of the share capital of NSDC, whereas balance 51% of the share capital is owned by the private sector.

NSDC acts as a catalyst in skill development by providing funding to enterprises, companies and organizations that provide skill training. It aims to promote skill development by catalyzing creation of large, quality and for-profit vocational institutions. Further, the organization provides funding to build scalable and profitable vocational training initiatives. Its mandate is also to enable support system which focuses on quality assurance, information systems and train the trainer academies either directly or through partnerships. The differentiated

focus on 21 sectors under NSDC's purview and its understanding of their viability makes every sector attractive to private investment. Data as per December 2018 reports, NSDC has 449 training partners, 12866000 trainees trained by them, 6701 training centers and 38 sector skill council.

The main objectives of the NSDC are to:

- Upgrade skills to international standards through significant industry involvement and develop necessary frameworks for standards, curriculum and quality assurance
- Enhance, support and coordinate private sector initiatives for skill development through appropriate Public-Private Partnership (PPP) models; strive for significant operational and financial involvement from the private sector
- Play the role of a "market-maker" by bringing financing, particularly in sectors where market mechanisms are ineffective or missing
- Prioritize initiatives that can have a multiplier or catalytic effect as opposed to one-off impact.

Objective of the Study

- To understand NSDC
- To recognise its importance.
- To create awareness about the facilities or schemes of NSDC.

Methodology of the Study

The study is purely based on Secondary data which includes Published and unpublished sources like Magazines, Public books, websites, and conference papers.

Vision, Mission and Objective

Vision: NSDC was established to fulfill the growing need in India for skilled manpower across sectors and narrow the existing gap between the demand and supply of skills. The Union Finance Minister Shri P. Chidambaram announced the formation of the NSDC in his 2008-09 Budget Speech, "There is a compelling need to launch a world-class skill development programme in a mission mode that will address the challenge of imparting the skills required by a growing economy. Both the structure and the leadership of the mission must be such that the programme can be scaled up quickly to cover the whole country."

Mission

- Upgrade skills to international standards through significant industry involvement and develop necessary frameworks for standards, curriculum and quality assurance.
- Enhance, support and coordinate private sector initiatives for skill development through appropriate Public-Private Partnership (PPP) models; strive for significant operational and financial involvement from private sector.
- Play the role of a 'market-maker' by bringing funds, particularly in sectors where market mechanisms are ineffective or missing.
- Prioritise initiatives that can have a multiplier or catalytic effect as opposed to one-off impact.

Objective: To contribute significantly to the overall target of skilling up of people in India, mainly by fostering private sector initiatives in skill development programmes and to provide funding.

Schemes and Initiatives

A. Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

It is the flagship scheme of MSDE. The objective of this Skill Certification scheme is to enable a large number of Indian youth to take up industry-relevant skill training that will help them in securing a better livelihood. Individuals with prior learning experience or skills will also be assessed and certified under the Recognition of Prior Learning (RPL) component of the Scheme. NSDC is the designated implementing agency for PMKVY. They cover:

1. Short term training
2. Recognition of prior learning
3. Special Projects
4. Kaushal and Rozgar Mela
5. Placement
6. Monitoring

This Scheme is applicable to any candidate of Indian nationality who: •

- Is unemployed youth or, school/college dropouts, •
- Possesses an Aadhaar card and a bank account •
- Has a verifiable alternate ID such as PAN or Voter ID (applicable only for the states of North East region and J&K - Additional IDs may be added from time to time) •

- Any other criteria, as defined by the SSCs for the respective job roles

College students should not be allowed or enrolled under PMKVY as the Scheme focuses on school/college dropouts. Additionally, in case of corporate or factory premises, candidates cannot be their own employees or daily wagers.

B. Pradhan Mantri Kaushal Kendra

NSDC aims to promote skill development by catalyzing the creation of large, quality, for-profit vocational institutions. MSDE intends to establish visible and aspirational training centers in every district of the country. These training centers shall be called Pradhan Mantri Kaushal Kendra (PMKKs).

The model training centers envisage to:

- Create benchmark institutions that demonstrate aspirational value for competency-based skill development training.
- Focus on elements of quality, sustainability and Connection with stakeholders in skills delivery process.
- Transform from a Mandate-driven footloose model to a sustainable institutional model.

Funding Support

Capital Expenditure

NSDC will provide a concessional secured loan funding per centre, up to 75% of the project investment, to cover expenditure only related to:

- Training infrastructure including purchase of plant, machinery & equipment
- Training aid and other associated items
- Civil work including setting up prefabricated structures and retrofit existing structures

Operations Support

The sustainability of the centers will be assured against dedicated training numbers under Pradhan Mantri Kaushal Vikas Yojna (PMKVY) or its successor schemes (any other scheme under MSDE or NSDC). Each PMKK will be assured a training mandate for three years, under the PMKVY scheme, as per common norms, subject to capacity and utilization of the centre.

C. UDAAN

It is a unique partnership between the corporates, nsdc & the youth of jammu and kashmir. The Special Industry Initiative (SII) for J&K is funded by Ministry of Home Affairs and implemented by National Skill Development Corporation (NSDC). The programme is a part

of the overall initiative for addressing economic issues in J&K. While steps are being taken by the State and Central Government to revive economic activity in J&K, Udaan programme is a special initiative to address the needs of the educated unemployed in J&K. Udaan program is focused on youth of Jammu & Kashmir (J&K) who are graduates, post graduates and three year diploma engineers. The aim is to provide skills and job opportunities to the youth. Simultaneously, the aim is also to provide exposure to corporate India towards the rich talent pool available in J&K. The target was to reach out to 40,000 youth in J&K over a period of 5 years. It was observed that youth from J&K were unable to find employment in many companies as either they were unaware of the opportunity in the companies or the companies were unaware of the talent pool that existed in J&K. The principal focus of the Udaan programme is to create an ecosystem that would bridge this gap. The Udaan programme is designed to encourage corporate to travel to J&K meet with the youth and hire aspiring youth in J&K who wish to explore the opportunity to work with corporate. Udaan provides a framework of support to the youth to travel, undergo training in firms and transit to work.

Udaan has two Objectives

- To provide exposure to the graduates and post graduates of Jammu and Kashmir to the best of corporate India and
- To provide corporate India with exposure to the rich talent pool available in the state

D. International Skill Training

A country's ability and potential for growth is determined by the size of its youth population. Youth today need to be harnessed, motivated, skilled and streamlined to bring rapid progress for a country. India has the relative advantage at present over other countries in terms of distribution of youth population even when compared to large, fast growing Asian economies such as China and Indonesia, the two major countries other than India which determine the demographic features of Asia. Indian International Skill Centers (IISCs) were set up through the National Skill Development Corporation (NSDC) with the objective to provide skill training and certification bench marked to International Standards to facilitate overseas mobility of Indian workforce for jobs. In the IISC pilot phase, 14 centers were operationalized, and 593 candidates(offline data) were enrolled at these centers. The assessment and certification under IISC pilot were done by an International Awarding Body.

Key focus areas of the IISC Policy

- Assessment and Certification on international standards as per best practices and recognition in different countries.
- IISCs to have Career Guidance and Counseling centers within them ie. International training and employment and act as resource centers facilitating foreign employment support. The counseling centers would help students to understand the various overseas employment opportunities available and match their interest and talent with the most relevant opportunities.
- IISCs as per new policy are expected to provide only incremental skill training if found lacking in candidates.
- PDOT will be imparted to IISC candidates as sponsored by MEA under PKVY.

E. Technical Intern Training Program

MSDE has established its institutional framework for Technical Intern Training Program (TITP) implementation and has appointed National Skill Development Corporation (NSDC) to be the Implementing and Monitoring Agency for the program.NSDC is steering impactful execution of the program in India and Japan. It has empanelled over 20 Sending Organizations to drive the desired agenda of training the youth, who will advance their careers and contribute towards economic progress of the respective countries. MSDE, Govt. of India and the ministry of Justice, Ministry of Foreign Affairs and Ministry of Health, Labour and Welfare of Japan signed a Memorandum of Cooperation initiating the Technical Intern Training Program (TITP) in India in October 2017.

Achievements

- Over 5.2 million students trained
- 235 private sector partnerships for training and capacity building, each to train at least 50,000 persons over a 10-year period.
- 38 Sector Skill Councils (SSC) approved in services, manufacturing, agriculture & allied services, and informal sectors. Sectors include 19 of 20 high priority sectors identified by the Government and 25 of the sectors under Make in India initiative.
- 1386 Qualification Packs with 6,744 unique National Occupational Standards (NOS). These have been validated by over 1000 companies.

- Vocational training introduced in 10 States, covering 2400+ schools, 2 Boards, benefitting over 2.5 lakh students. Curriculum based on National Occupational Standards (NOS) and SSC certification. NSDC is working with 21 universities, Community Colleges under UGC/AICTE for alignment of education and training to NSQF.
- Designated implementation agency for the largest voucher-based skill development program, Pradhan Mantri Kaushal Vikas Yojana.
- Skill Development Management System (SDMS) with 1400 training partners, 28179 training centres, 16479 trainers, 20 Job portals, 77 assessment agencies and 4983 empanelled assessors. Hosting infrastructure certified by ISO 20000/27000 supported by dedicated personnel.

Conclusion and Recommendation

The study shows the performance of NSDC for providing skills to needy and backward public targeting youth of the nation. The schemes initiated and implemented are supportive to those-who are drop outs. These schemes are designed and implemented by Indian Government as per the requirement in rural areas. The government is putting its large effort for filling the gap between rich and poor Indian Citizens. However, yet more awareness is required to create among needy public in rural areas about these schemes so they can avail the maximum benefit from it.

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